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U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF ENTOMOLOGY—BULLETIN No. 53.
L. O. HOWARD, Entomologist.

CATALOGUE

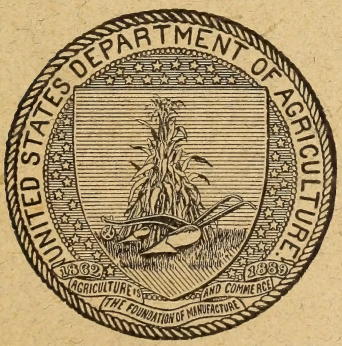
OF THE

EXHIBIT OF ECONOMIC ENTOMOLOGY

AT THE

LEWIS AND CLARK CENTENNIAL EXPOSITION, PORTLAND, OREGON, 1905.

COMPILED UNDER THE DIRECTION OF THE ENTOMOLOGIST
BY
ROLLA P. CURRIE.



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1905.

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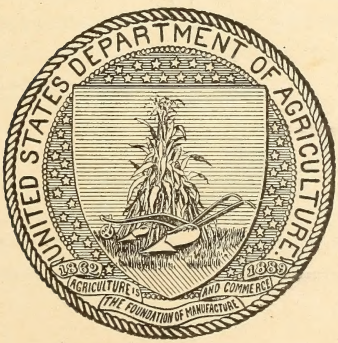

WASHINGTON:

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1905.

LETTER OF TRANSMITTAL.

UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF ENTOMOLOGY,
Washington, D. C., April 11, 1905.

SIR: I have the honor to transmit herewith the copy for a catalogue of the exhibit of economic entomology made by the Bureau of Entomology at the Lewis and Clark Centennial Exposition held at Portland, Oreg., during the present year. It has been compiled, under my direction, by Mr. Rolla P. Currie, assistant in the Bureau of Entomology, and I recommend its publication as Bulletin No. 53 of this Bureau.

Respectfully,

L. O. HOWARD,
Entomologist.

Hon. JAMES WILSON,
Secretary of Agriculture.

INTRODUCTION.

The following catalogue of the exhibit of economic entomology made by the Bureau of Entomology, U. S. Department of Agriculture, at the Lewis and Clark Centennial Exposition, will, it is believed, increase the usefulness of the exhibit by furnishing the visitor, in a convenient form for future reference, much of the data contained on the labels, and by supplying him with references to published articles from which additional information can be gained.

The catalogue has been compiled from Bulletins Nos. 47[a] and 48[b] of this Bureau and includes all portions of each of these bulletins, revised and corrected, which relate to the exhibits installed at Portland.

Owing to the fact that less space was available for the exhibit by the Bureau of Entomology at Portland than at St. Louis, it has been necessary to reduce the size of the exhibits considerably, and this has in most part been accomplished by leaving out insects which affect strictly eastern or southern crops. In other respects, however, the exhibit is very similar to that made at St. Louis, and includes all those features which proved of especial interest there. Care has been taken to retain such insects as are of especial importance on the Pacific coast and those which affect important Pacific coast industries, such as fruit raising and lumbering.

Persons desiring further information than can be gained from this catalogue, or from conversation with the attendant in charge of the exhibit, are requested to address the writer at the U. S. Department of Agriculture, Washington, D. C.

L. O. Howard,
Entomologist.

[a] Catalogue of the Exhibit of Economic Entomology at the Louisiana Purchase Exposition, St. Louis, Mo., 1904; by E. S. G. Titus and F. C. Pratt.

[b] Catalogue of Exhibits of Insect Enemies of Forests and Forest Products at the Louisiana Purchase Exposition, St. Louis, Mo., 1904; by A. D. Hopkins.

CONTENTS.

ORDER OF CASES IN EXHIBIT.

	Page.
Insects injurious to orange and lemon (4 cases)	7
The San Jose scale	12
Insects injurious to apple (6 cases)	12
Insects injurious to peach	19
Insects injurious to pear and plum	20, 21
Insects injurious to grape (2 cases)	21
Insects injurious to strawberry	24
Insects injurious to blackberry and raspberry	26
Insects injurious to currant and gooseberry	28
Insects injurious to grasses and alfalfa (2 cases)	29, 31
Insects injurious to clover (4 cases)	32
Insects injurious to small grains (wheat, oats, rye, barley, etc.) (3 cases)	38
Insects injurious to hop	41
The Mexican cotton boll weevil	42
The cotton bollworm; corn-ear worm	42
Insects injurious to sugar beet (4 cases)	43
Insects injurious to beans and peas (2 cases)	47
Insects injurious to crucifers (cabbage, cauliflower, cress, mustard, etc.) (2 cases)	50
Insects injurious to potato	54
Insects injurious to sweet potato and tomato	56, 57
Insects injurious to asparagus	57
Insects injurious to cucurbits (melon, cucumber, squash, pumpkin, etc.)	59
Insects injurious to stored products (2 cases)	60
Household insects	64
Insects which may spread disease	65
Insects which directly injure or annoy human beings	66
Insects injurious to domestic animals	68
Insects injurious to forests in the northwestern and northeastern United States (24 cases)	70
Insects injurious to forests in general (24 cases)	83

SPECIAL EXHIBITS.

Enlarged models of insects, and of insects and injured plants	103
Enlarged models of the parasite causing malaria (æstivo-autumnal fever)	106
Photographs of insect damage to forests	106
Living insects	107

INDEX TO INSECTS EXHIBITED.

Systematic names	109
Common names	118

CATALOGUE OF THE EXHIBIT OF ECONOMIC ENTOMOLOGY AT THE LEWIS AND CLARK CENTENNIAL EXPOSITION.

INSECTS INJURIOUS TO ORANGE AND LEMON.

For general articles relating to insects affecting these fruits see Hubbard, 1885, and Insects Affecting the Orange, U. S. Dept. Agric.; Marlatt, Scale Insects and Mites of Citrus Fruits, Farmers' Bul. 172, 1903.

THE APPLE TWIG-BEETLE.

Stephanoderes hispidulus Lec.

(Formerly *Hypothenemus eruditus* auct.)
EXHIBIT: Adult and work.

THE OAK AMBROSIA BEETLE.

Xyleborus affinis Eichh.

For general account see Hubbard, Bul. 7, n. s., Div. Ent., U. S. Dept. Agric., pp. 19–20, 1897, under *X. pubescens* Zimm.
EXHIBIT: Adult, work, and figure.

THE PAN-AMERICAN PLATYPUS.

Platypus compositus Say.

For general article see Hubbard, Bul. 7, n. s., Div. Ent., U. S. Dept. Agric., pp. 14–16, 1897.
EXHIBIT: Adult, work, and figure.

FULLER'S ROSE BEETLE.

Aramigus fulleri Horn.

For general account of life history see Chittenden, Bul. 27, n. s., Div. Ent., U. S. Dept. Agric., pp. 88–96, 1901.
EXHIBIT: Adult.

THE COFFEE-BEAN WEEVIL.

Aræcerus fasciculatus DeG.

For partial life history and general account see Chittenden, Bul. 8, n. s., Div. Ent., U. S. Dept. Agric., pp. 36–38, 1897.
EXHIBIT: Adult and work.

THE ORANGE CHRYSOBOTHRIS.

Chrysobothris chrysœla Ill.

EXHIBIT: Adult.

EPITRAGUS TOMENTOSUS Lec.

EXHIBIT: Adult.

PACHNÆUS DISTANS Horn.

EXHIBIT: Adult.

ORANGE LEAF-NOTCHER.

Artipus floridanus Horn.

EXHIBIT: Adult and work.

THE ORANGE SAWYER.

Elaphidion inerme Newm.

For general account see Chittenden, Bul. 18, n. s., Div. Ent., U. S. Dept. Agric., p. 41, 1898.
EXHIBIT: Adult and work.

LEPTOSTYLUS BIUSTUS Lec.

EXHIBIT: Adult and work.

THE ORANGE DOG; HOG CATERPILLAR.

Papilio thoas Linn.

(Formerly *P. cresphontes.*)
For brief account of larva see Lintner, 9th Rpt. State Ent. N. Y., pp. 336–337, 1893.
EXHIBIT: Eggs, larva, chrysalis, adult, and figure.

ORANGE LEAF-ROLLER.

Platynota rosirana Walk.

EXHIBIT: Eggs, pupa, and adult.

THE SADDLE-BACK CATERPILLAR.

Sibine stimulea Clem.

(Formerly *Empretia.*)
For general account see Lugger, 4th Rpt. State Ent. Minn., pp. 98–99, 1899.
EXHIBIT: Pupa, adult, and figure.

THE COMMON BAGWORM.

Thyridopteryx ephemeræformis Steph.

For general account see Packard, 5th Rpt. U. S. Ent. Com., pp. 258–262, 1890.
EXHIBIT: Larva, cocoon, adult, and figure.

THE STINGING CATERPILLAR.

Megalopyge opercularis S. & A.

For short account see Lugger, 4th Rpt. State Ent. Minn., pp. 95–96, 1899.
EXHIBIT: Cocoon and adult.

THE SKIFF CATERPILLAR.

Prolimacodes scapha Harr.

(Larva feeds on leaves.)
EXHIBIT: Adult.

THE ORANGE CASE-BEARER.

Eurycyttarus confederata Grt.

(Larvæ feed upon lichens on tree trunk, occasionally gnawing fruit; formerly *Psyche.*)
EXHIBIT: Cases on twig.

THE TWO-SPOTTED RED SPIDER.

Tetranychus mytilaspidis Riley.

For description and distribution see Banks, Tech. series 8, Div. Ent., U. S. Dept. Agric., pp. 71–72, 1900.
For general account of *T. bimaculatus* Bnks. see Chittenden, Bul. 27, n. s., Div. Ent., U. S. Dept. Agric., pp. 35–42, 1901.
EXHIBIT: Figure.

THE ORANGE WHITE SPOT.

Tetranychoides californica Bks.

For description see Banks, Journ. N. Y. Ent. Soc., Vol. XII, p. 54, pl. II, fig. 1, 1904.
EXHIBIT: Work and figure.

THE ORANGE FRUIT MITE.

Tenuipalpus californicus Bks.

For description see Banks, Journ. N. Y. Ent. Soc., Vol. XII, p. 55, pl. II, fig. 2, 1904.
EXHIBIT: Work and figure.

RUST MITE OF THE ORANGE; THE SILVER MITE OF THE LEMON.

Eriophyes oleivorus Ashm.

(Formerly *Phytoptus.*)
EXHIBIT: Figure.

THE TWO-STRIPED WALKING-STICK.

Anisomorpha buprestoides Stäl.

EXHIBIT: Nymph and adult.

THE ANGULAR-WINGED KATYDID.

Microcentrum retinerve Burm.

EXHIBIT: Eggs, adult, and parasitized eggs.

NORTHERN MOLE CRICKET.

Gryllotalpa borealis Burm.

EXHIBIT: Nymph and adult.

THE LUBBER GRASSHOPPER.

Dictyophorus reticulatus Thunb.

For brief account see Morgan, Bul. 30, n. s., Div. Ent., U. S. Dept. Agric., pp. 28–29, 1901.
EXHIBIT: Nymph and adult.

THE COTTON STAINER.

Dysdercus suturellus H.-Schf.

For short accounts see Howard, Farmers' Bul. 47, U. S. Dept. Agric., pp. 30–31, 1897; Insect Book, p. 308, fig. 201 and pl. 31, fig. 15, 1901.
EXHIBIT: Nymph, adult, and figure.

EUTHOCTHA GALEATOR Fab.

EXHIBIT: Adult.

THE SOUTHERN LEAF-FOOTED PLANT-BUG.

Leptoglossus phyllopus Linn.

For general account see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 46–48, 1899.
EXHIBIT: Adult.

EUSCHISTUS SERVUS Say.

EXHIBIT: Adult.

NEZARA HILARIS Say.

EXHIBIT: Adult.

WHITE FLY; MEALY WING.

Aleyrodes citri R. & H.

For general account see Marlatt, Farmers' Bul. 172, U. S. Dept. Agric., pp. 36–38, 1903.
EXHIBIT: Adult, work and figure.

ORANGE APHIS; COTTON APHIS.

Aphis gossypii Glover.

(Curls leaves and stops young growth; usually well controlled by parasites and other enemies.)

For short account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 58–61, 1903.

Exhibit: Eggs, adult, work, figure, and the enemies *Baccha clavata* Fab., *Hemerobius* sp., *Chrysopa plorabunda* Fitch, and a hymenopterous parasite.

COTTONY CUSHION SCALE; FLUTED SCALE.

Icerya purchasi Mask.

(Food plants: Acacia, cypress, grasses, lemon, orange, pine, rose.)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 25–27, 1903.

Exhibit: Infested twig.

THE DESTRUCTIVE MEALY-BUG.

Pseudococcus citri Risso.

(Formerly *Dactylopius destructor.*)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 99–100, 1903.

Exhibit: Infested leaves.

THE LONG-SPINED MEALY-BUG.

Pseudococcus longispinus Targ.

(Formerly *Dactylopius* spp.)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 104–105, 1903.

Exhibit: Infested leaves.

THE FLORIDA WAX-SCALE.

Ceroplastes floridensis Comst.

(Food plants: Citrus, fig, myrtle, oleander.)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., p. 157, 1903.

Exhibit: Infested leaves.

THE BARNACLE SCALE.

Ceroplastes cirripediformis Comst.

(Food plants: Myrtle, orange, persimmon, quince.)

For bibliography and food plants see Fernald, Cat Coccidæ of World, Bul. 88, Mass. Agr. Coll., p. 150, 1903.

Exhibit: Infested leaves.

THE SOFT SCALE.

Coccus hesperidum Linn.

(Food plants: Laurel, lemon, myrtle, oleander, orange, etc.; formerly *Lecanium.*)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 168–170, 1903.

Exhibit: Infested twig.

THE HEMISPHERICAL SCALE.

Saissetia hemisphærica Targ.

(Food plants: Oleander, orange, peach, etc.; formerly *Lecanium.*)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 202–203, 1903.

Exhibit: Infested twig.

THE BLACK SCALE.

Saissetia oleæ Bern.

(Food plants: Apple, apricot, olive, orange, pear, plum, rose; formerly *Lecanium.*)
For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 205–206, 1903.
EXHIBIT: Infested twig.

THE OLEANDER SCALE.

Aspidiotus hederæ Vall.

(Food plants: Currant, box, cherry, olive, oleander, orange, etc.; formerly *A. nerii* Bouché.)
For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 260–264, 1903.
EXHIBIT: Infested twig.

THE ORANGE CHIONASPIS.

Chionaspis citri Comst.

(Food plants: Euonymus, orange, palms.)
For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bull. 88, Mass. Agr. Coll., pp. 214–215, 1903; Marlatt, Yearbook, U. S. Dept. Agric., 1900, p. 270, 1901.
EXHIBIT: Infested twig.

THE RED SCALE OF CALIFORNIA.

Chrysomphalus aurantii Mask.

(Food plants: Agave, apple, fig, grape, lemon, orange, pear, plum, quince, willow, etc.; formerly *Aspidiotus.*)
For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bull. 88, Mass. Agr. Coll., pp. 287–288, 1903; Marlatt, Yearbook, U. S. Dept. Agric., 1900, p. 268, 1901.
EXHIBIT: Infested twig.

THE CIRCULAR SCALE.

Chrysomphalus ficus Ashm.

(Food plants: Lemon, oleander, orange, palm, rose, etc.; formerly *Aspidiotus.*)
For bibliography and food plants see *Chrysomphalus aonidum*, Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 286–287, 1903; Marlatt, Yearbook, U. S. Dept. Agric., 1900, p. 269, 1901.
EXHIBIT: Infested twig.

THE PURPLE SCALE.

Lepidosaphes beckii Newm.

(Food plants: Citron, fig, lemon, oak, orange. Formerly *Mytilaspis citricola* Glov.)
For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bull. 88, Mass. Agr. Coll., pp. 305–306, 1903; Marlatt, Yearbook, U. S. Dept. Agric., 1900, p. 261, 1901.
EXHIBIT: Infested twig.

GLOVER'S SCALE; LONG SCALE.

Lepidosaphes gloveri Pack.

(Food plants: Lime, magnolia, orange, palms; formerly *Mytilaspis.*)
For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., p. 309, 1903; Marlatt, Yearbook, U. S. Dept. Agric., 1900, p. 265, 1901.
EXHIBIT: Infested twig.

THE CHAFF SCALE.

Parlatoria pergandei Comst.

(Food plants: Japonica, lemon, orange.)
For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 319–320, 1903; Marlatt, Yearbook, U. S. Dept. Agric., 1900, p. 270, 1901.
EXHIBIT: Infested twigs.

THE SAN JOSE SCALE.

THE SAN JOSE SCALE.

Aspidiotus perniciosus Comst.

(Food plants: Almond, apple, apricot, birch, black walnut, black currant, catalpa, chestnut, crab-apple, crab-grass, cherry, grape, hickory, oak, peach, pear, persimmon, plum, poplar, prune, Rocky Mountain cherry, rose, silver maple, willow, and many other plants.)
For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 271–275, 1903; Howard and Marlatt, Bul. 3, n. s., Div. Ent. U. S. Dept. Agric., 1896, 80 pp.
EXHIBIT: Infested twig, fruit, figures, and enemies: *Pentilia misella* Lec., adult and figure; *Chilocorus similis* Rossi, larva, pupa, adult, and figure; parasite, *Aphelinus diaspidis* How., adult and figure.

INSECTS INJURIOUS TO APPLE.

For special treatises on apple insects see Bruner, Trans. Nebr. St. Hort. Soc. f. 1894, pp. 155–223, 1895; Harvey and Munson, Bul. 56, Maine Agr. Expt. Sta., 1899; Saunders, Insects Injurious to Fruits, 2d ed., pp. 13–139, 1900.

INJURING THE ROOTS.

THE WOOLLY APPLE APHIS.

Schizoneura lanigera Hausm.

For general account see Marlatt, Cir. 20, Div. Ent., U. S. Dept. Agric., 1897.
EXHIBIT: Work, figure, parasite, *Aphelinus mali* Hal., and enemy, *Scymnus cervicalis* Muls.

INJURING THE TRUNK.

FLAT-HEADED APPLE-TREE BORER.

Chrysobothris femorata Fab.

For general account see Chittenden, Cir. 32, Div. Ent., U. S. Dept. Agric., pp. 9–12, 1898.
EXHIBIT: Adult, work, and figure.

ROUND-HEADED APPLE-TREE BORER.

Saperda candida Fab.

For general account see Chittenden, Cir. 32, Div. Ent., U. S. Dept. Agric., pp. 1–8, 1898.
EXHIBIT: Adult, work, and figure.

APPLE-WOOD STAINER; PIN-BORER.

Pterocyclon mali Fitch.

(Formerly *Monarthrum.*)
For general account of this and an allied species, *M. fasciatum* Say, see Hubbard, Bul. 7, n. s., Div. Ent., U. S. Dept. Agric., pp. 26–28, 1897.
EXHIBIT: Adult and figure.

INJURING THE BRANCHES.

THE APPLE-TREE PRUNER.

Elaphidion villosum Fab.

For full account and food plants see Chittenden, Bul. 18, n. s., Div. Ent., U. S. Dept. Agric., pp. 35–40, 1898.
EXHIBIT: Adult, work, and figure.

THE NEW YORK WEEVIL.

Ithycerus noveboracensis Först.

For general account see Lugger, 5th Rpt. St. Ent. Minn., pp. 187–189, 1899.
EXHIBIT: Adult and work.

THE APPLE TWIG-BORER.

Amphicerus bicaudatus Say.

For general account see Marlatt, Farmers' Bul. 70, U. S. Dept. Agric., pp. 11–13, fig., 1898.
EXHIBIT: Adult, work, and figur .

THE APPLE TWIG-BEETLE.

Stephanoderes hispidulus Lec.

(Formerly *Hypothenemus.*)
EXHIBIT: Adult and work.

PEAR-BLIGHT BEETLE; SHOT-BORER.

Xyleborus pyri Peck.

(Formerly considered *X. dispar.*)
For general account see Hubbard, Bul. 7, n. s., Div. Ent., U. S. Dept. Agric., pp. 22–23, 1897.
EXHIBIT: Adult and work.

THE COSMOPOLITAN AMBROSIA BEETLE.

Xyleborus saxeseni Ratz.

(Formerly *X. xylographus.*)
For general account see Hubbard, Bul. 7, n. s., Div. Ent., U. S. Dept. Agric., pp. 24–26, 1897.
EXHIBIT: Adult.

FRUIT-TREE BARK BEETLE; THE SHOT-HOLE BORER.

Scolytus rugulosus Ratz.

For general account see Chittenden, Cir. 29, Div. Ent., U. S. Dept. Agric., 1898.
EXHIBIT: Adult and figure.

THE BUFFALO TREE-HOPPER.

Ceresa bubalus Fab.

For general account see Marlatt, Cir. 23, Div. Ent., U. S. Dept. Agric., 1897.
EXHIBIT: Adult, work, and figure.

THE PERIODICAL CICADA.

Tibicen septendecim Linn.

For life history and general article see Marlatt, Bul. 14, n. s., Div. Ent., U. S. Dept. Agric., 1898.
EXHIBIT: Pupa, pupa skins, and adult.

THE SAN JOSE SCALE.

Aspidiotus perniciosus Comst.

(Food plants: Almond, apple, apricot, birch, black walnut, black currant, catalpa, chestnut, crab-apple, crab-grass, cherry, grape, hickory, oak, peach, pear, persimmon,

plum, poplar, prune, Rocky Mountain cherry, rose, silver maple, willow, and many other plants.)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 271–275, 1903; Howard and Marlatt, Bul. 3, n. s., Div. Ent., U. S. Dept. Agric., 1896. 80 pp.

Exhibit: Infested twig.

PUTNAM'S SCALE; CRANBERRY SCALE.

Aspidiotus ancylus Putn.

(Food plants: Apple, apricot, box elder, cottonwood, cranberry, elm, hemlock, maple, oak, peach, pear, plum, etc.)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 252–253, 1903.

Exhibit: Infested twig.

THE CHERRY SCALE; FORBES' SCALE.

Aspidiotus forbesi Johns.

(Food plants: Apple, cherry, currant, honey locust, peach, pear, plum, walnut, etc.)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 259–260, 1903.

Exhibit: Infested twig.

THE GREEDY SCALE.

Aspidiotus rapax Comst.

(Food plants: Cottonwood, maple, olive, pear, quince, apple, etc.)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 276–278, 1903.

Exhibit: Infested twig.

THE EUROPEAN FRUIT-SCALE.

Aspidiotus ostreæformis Curt.

(Food plants: Apple, cherry, maple, oak, peach, pear, etc.)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 268–270, 1903.

Exhibit: Infested twig.

THE SCURFY SCALE.

Chionaspis furfura Fitch.

(Food plants: Apple, cherry, currant, elm, pear, etc.)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 217–219, 1903; Howard, Yearbook, U. S. Dept. Agric., 1894, pp. 259–261, figs.; Banks, Bul. 34, Div. Ent., U. S. Dept. Agric., p. 14, 1902.

Exhibit: Infested twig.

OYSTER-SHELL SCALE.

Lepidosaphes ulmi Linn.

(Attacks principally apple, currant, Cornus, cottonwood, lilac, pear, sassafras, etc. Formerly *Mytilaspis pomorum* Bouché.)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 314–317, 1903.

Exhibit: Infested twig.

THE BLACK SCALE.

Saissetia oleæ Bern.

(Food plants: Apple, apricot, olive, orange, pear, plum, rose; formerly *Lecanium.*)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 205–206, 1903.

Exhibit: Infested twig.

INJURING THE LEAVES.

PISTOL CASE-BEARER.

Coleophora malivorella Riley.

(Feeds on leaves and buds.)
For general account see Slingerland, Bul. 124, Cornell Univ. Agr. Expt. Sta., 1897.
Exhibit: Cocoon, adult, work, and figure.

EYE-SPOTTED BUD-MOTH.

Tmetocera ocellana Schiff.

(Feeds on buds and young leaves.)
For general account see Slingerland, Bul. 50, Cornell Univ. Agr. Expt. Sta, 1893.
Exhibit: Pupa, adult, and work.

APPLE-TREE BUCCULATRIX.

Bucculatrix pomifoliella Clem.

For general account and partial bibliography see Slingerland and Fletcher, Bul. 214, Cornell Univ. Agr. Expt. Sta., pp. 69–78, figs., 1903.
Exhibit: Cocoon, adult, and figure.

THE RESPLENDENT SHIELD-BEARER.

Coptodisca splendoriferella Clem.

For general account see Lugger, 4th Rpt. St. Ent. Minn., pp. 263–265, 1899.
Exhibit: Cocoon, adult, work, and figure.

CHAPIN'S APPLE-LEAF SEWER.

Ancylis nubeculana Clem.

For brief article see Lugger, 4th Rpt. St. Ent. Minn., pp. 239–240, 1899.
Exhibit: Pupa, adult, work, and figure.

THE OBLIQUE-BANDED LEAF-ROLLER.

Archips rosaceana Harr.

(Formerly *Cacœcia.*)
For general account see Lugger, 4th Rpt. St. Ent. Minn., pp. 226–227, 1899.
Exhibit: Pupa, adult, and work.

THE LESSER APPLE LEAF-FOLDER.

Acleris minuta Rob.

(Formerly *Teras.*)
For general account see J. B. Smith, Farmers' Bul. 178, U. S. Dept. Agric., pp. 12–17, 1903.
Exhibit: Pupa and adult.

THE LEAF CRUMPLER.

Mineola indiginella Zell.

For general account see Lugger, 4th Rpt. St. Ent. Minn., pp. 211–313, 1899.
Exhibit: Cocoon, pupa, adult, and figure.

THE APPLE-LEAF SKELETONIZER.

Canarsia hammondi Riley.

For general account see Lugger, 4th Rpt. St. Ent. Minn., pp. 217–218, 1899.
Exhibit: Pupa, adult, and work.

APPLE-TREE TENT-CATERPILLAR.

Malacosoma americana Fab.

(Formerly *Clisiocampa.*)
For life history and bibliography see Felt, 14th Rpt. St. Ent., N. Y., pp. 177–190, 1898.
Exhibit: Eggs, larva, cocoon, pupa, adult, and work, and the parasites *Pimpla conquisitor* Say, and *Ichneumon lætus* Brullé.

THE LIME-TREE WINTER-MOTH.

Erannis tiliaria Harr.

(Formerly *Hibernia.*)
For general account see Lugger, 4th Rpt. St. Ent. Minn., pp. 193–195, 1899.
Exhibit: Pupa, adult, and figure.

THE ELM SPANWORM.

Ennomos subsignarius Hbn.

For general account see Packard, 5th Rpt. U. S. Ent. Comm., pp. 232–233, 306–307, 1890.
Exhibit: Eggs, larva, pupa, and work.

THE APPLE LEAF-MINER.

Tischeria malifoliella Clem.

For life history and bibliography see Lintner, 11th Rpt. N. Y. St. Ent., pp. 160–162, 1896.
Exhibit: Adult and work.

THE SPRING CANKER-WORM.

Paleacrita vernata Peck.

For general account see Coquillett, Cir. 9, Div. Ent., U. S. Dept. Agric., pp. 1–3, 1895.
Exhibit: Larva, adult, and figure.

THE FALL CANKER-WORM.

Alsophila pometaria Harr.

(Formerly *Anisopteryx.*)
For general account see Coquillett, Cir. 9, Div. Ent., U. S. Dept. Agric., pp. 3–4, 1895.
Exhibit: Eggs, larva, cocoon, adult, and figure.

THE WHITE-MARKED TUSSOCK-CATERPILLAR.

Hemerocampa leucostigma S. & A.

(Larvæ feed extensively upon fruit and shade trees and often damage shrubs and vines; formerly *Orgyia.*)
For general account of this insect and its parasites see Howard, Tech. Ser., 5, Div. Ent., U. S. Dept. Agric., 1897; for life history, etc., Howard, Farmers' Bul. 99, pp. 12–20, 1899.
Exhibit: Egg-masses, larva, and adult.

THE FALL WEBWORM.

Hyphantria cunea Dru.

For general account see Howard, Farmers' Bul. 99, U. S. Dept. Agric., pp. 20–25, 1899.
Exhibit: Larva, pupa, adult, and work.

THE COMMON BAGWORM.

Thyridopteryx ephemeræformis Steph.

For general account see Packard, 5th Rpt. U. S. Ent. Comm., pp. 258–262, 1890.
Exhibit: Cocoons and figure.

IO MOTH.

Automeris io Fab.

For general account see Lugger, 4th Rpt. State Ent. Minn., pp. 126–129, fig. 130, and pl. 16, fig. 129, 1899.
Exhibit: Adult.

THE BROWN-TAIL MOTH.

Euproctis chrysorrhœa Linn.

For life history and general article see Fernald and Kirkland, Spec. Bul. Hatch. Expt. Sta., Mass., 15 pp., 1 fig., 3 pls., 1898; Marlatt, Circ. 58, Bur. Ent., U. S. Dept. Agric., 1905.

Exhibit: Larva, adult, and figure.

THE GYPSY MOTH.

Porthetria dispar Linn.

(Formerly *Ocneria.*)

For life history, habits, and general account see Forbush and Fernald, "The Gypsy Moth," 495 pp. + i–c, 1896; Howard, Bul. 11, n. s., Div. Ent., U. S. Dept. Agric., 1897; Marlatt, Circ. 58, Bur. Ent., U. S. Dept. Agric., 1905.

Exhibit: Larva, adult, and figure.

THE CLIMBING CUTWORM.

Euxoa scandens Riley.

(Formerly *Carneades.*)

For general account see Slingerland, Bul. 104, Cornell Univ. Agr. Expt. Sta., pp. 567–569, Pl. I, 1895.

Exhibit: Adult.

THE CECROPIA MOTH.

Samia cecropia Linn.

For general account see Riley, 4th Rpt. Ins. Mo., pp. 103–111, 1872.

Exhibit: Larva, cocoon, and adult.

APPLE APHIS.

Aphis pomi Linn.

For general account as *Aphis mali* see Smith, Bul. 143, N. J. Agr. Expt. Sta., 1900.

For general article treating of several species occurring on apple see Pergande, Bul. 44, Div. Ent., U. S. Dept. Agric., pp. 5–23, 1904.

Exhibit: Work and figure and the following enemies: *Adalia bipunctata* L., *Anatis 15-punctata* Ol., *Coccinella novemnotata* Hbst., *C. sanguinea* L., *Harmonia picta* Rand., *Hippodamia convergens* Guen., and *H. 13-punctata* L.

THE IMBRICATED SNOUT-BEETLE.

Epicærus imbricatus Say.

For general account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 28–29, 1903, and Bul. 19, n. s., pp. 62–67, 1899.

Exhibit: Adult.

SYNETA ALBIDA Lec.

For brief notice see Riley and Howard, Insect Life, Vol. IV, p. 396, 1892.

Exhibit: Adult and work.

RED-LEGGED FLEA-BEETLE.

Crepidodera rufipes Linn.

For general article see Insect Life, Vol. V, pp. 334–342, 1893.

Exhibit: Adult.

THE APPLE-LEAF FLEA-WEEVIL.

Orchestes pallicornis Say.

For short account of life history see Forbes, Trans. Ill. St. Hort. Soc. f. 1901, p. 147, 1902.

Exhibit: Adult.

25916—No. 53—05——2

INJURING THE FRUIT.

TEN-SPOTTED XANTHONIA.

Xanthonia decemnotata Say.

EXHIBIT: Adult and work.

THE INDIAN EUPHORIA.

Euphoria inda Linn.

For life history and general account see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 67–74, 1899.
EXHIBIT: Adult and work.

JUNE BEETLE; FIG EATER.

Allorhina nitida Linn.

For general account see Howard Bul. 10. n. s., Div. Ent., U. S. Dept. Agric., pp. 20–26, 1898.
EXHIBIT: Adult.

CODLING MOTH; APPLE WORM.

Carpocapsa pomonella Linn.

For full bibliography, life history, and illustrations see Simpson, Bul. 41, Div. Ent. U. S. Dept. Agric., 105 pp., figs., 1903.
EXHIBIT: Full life history (larva, pupa, cocoons, and adult) and parasites: *Pimpla annulipes* Brullé and *P. conquisitor* Say. Enemies: *Chauliognathus pennsylvanicus* DeG. and *Telephorus bilineatus* Say.

THE GREEN FRUIT-WORMS.

The following three species of *Xylina* are commonly known as green fruit-worms. For general account see Slingerland, Bul. 123, Cornell Univ. Agr. Expt. Sta., 1896.

Xylina antennata Walk.

EXHIBIT: Adult and figure.

Xylina grotei Riley.

EXHIBIT: Adult and figure.

Xylina laticinerea Grote.

EXHIBIT: Adult and figure.

ILLUSTRATION SHOWING WORK OF A TORTRICID ON APPLE.

(The larva mines in, and feeds beneath, the skin of the fruit.)

THE PLUM CURCULIO.

Conotrachelus nenuphar Hbst.

For general account and bibliography see Lintner, 7th Rpt. N. Y. St. Ent., pp. 288–296, 1891.
EXHIBIT: Adult and figure.

THE APPLE CURCULIO.

Anthonomus quadrigibbus Say.

For general account see Gillette, Bul. 11, Iowa Agric. Expt. Sta., pp. 492–494, 1890.
EXHIBIT: Adult and figure.

THE APPLE-FRUIT MAGGOT.

Rhagoletis pomonella Walsh.

(Formerly *Trypeta.*)
For life history see Harvey, Rpt. Maine Agr. Expt. Sta., p. 190, 1889; Banks, Bul. 34, Div. Ent., U. S. Dept. Agric., p. 45, 1902.
EXHIBIT: Puparium, adult, and figure.

INSECTS INJURIOUS TO PEACH.

Saunders, Insects Injurious to Fruits, 2d edit., pp. 191–200, 1900.

THE NATIVE PEACH BARK-BEETLE.

Phlœophthorus liminaris Harr.

(Formerly *Phlœotribus.*)
For general account see Lintner, 9th Rpt. N. Y. St. Ent., pp. 365–368, 1893.
EXHIBIT: Adult and work.

THE FRUIT-TREE BARK-BEETLE.

Scolytus rugulosus Ratz.

For general account see Chittenden, Cir. 29, Div. Ent., U. S. Dept. Agric., 1898.
EXHIBIT: Adult, work, figure, and the parasite *Cheiropachys colon* Linn.

THE PEACH BORER.

Sanninoidea exitiosa Say.

(Formerly *Sannina.*)
For general account see Marlatt, Cir. 17, Div. Ent., U. S. Dept. Agric., 1896.
EXHIBIT: Pupa, cocoon, adult, and figure.

THE PERIODICAL CICADA.

Tibicen septendecim Linn.

(Injures, by deposition of eggs in the twigs, almost all fruit, shade, and forest trees.)
For life history and general article see Marlatt, Bul. 14, n. s., Div. Ent., U. S. Dept. Agric., 1898.
EXHIBIT: Pupa, adult, and enemy *Sphecius speciosus* Dru.

THE BLUE-SPANGLED PEACH-MOTH.

Haploa lecontei Boisd.

(Formerly *Callimorpha.*)
For general account see Saunders, Insects Injurious to Fruits, 2d edit., pp. 197–199, 1900.
EXHIBIT: Adult.

THE PEACH-TWIG MOTH.

Anarsia lineatella Zell.

For general article with bibliography see Marlatt, Bul. 10, n. s., Div. Ent., U. S. Dept. Agric., pp. 7–20, 1898.
EXHIBIT: Pupa, adult, work, and figure.

THE INDIAN FRUIT-FLY.

Ceratitis capitata Wied.

For general article see Riley, Rpt. U. S. Dept. Agric., 1890, pp. 255–257.
EXHIBIT: Pupa, adult, and figure.

THE PEACH SCALE.

Eulecanium persicæ Fab.

(Food plants: Peach, plum, quince, etc.; formerly *Lecanium.*)
For bibliography, food plants, and distribution see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 191–193, 1903.
EXHIBIT: Infested twig.

PUTNAM'S SCALE; CRANBERRY SCALE.

Aspidiotus ancylus Putn.

(Food plants: Apple, apricot, box-elder, cottonwood, cranberry, elm, hemlock, maple, oak, peach, pear, plum, etc.)
For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 252–253, 1903.
EXHIBIT: Infested twig.

THE SAN JOSE SCALE.

Aspidiotus perniciosus Comst.

(Food plants: Almond, apple, apricot, birch, black walnut, black currant, catalpa, chestnut, crab-apple, crab-grass, cherry, grape, hickory, oak, peach, pear, persimmon, plum, poplar, prune, Rocky Mountain cherry, rose, silver maple, willow, and many other plants.)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 271–275, 1903; Howard and Marlatt, Bul. 3, n. s., Div. Ent., U. S. Dept. Agric., 1896, 80 pp.

EXHIBIT: Infested twig.

THE CHERRY LEAF-BEETLE.

Galerucella cavicollis Lec.

For general article and distribution see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 90–93, 1899.

EXHIBIT: Adult.

THE CHERRY-FRUIT MAGGOT.

Rhagoletis cingulata Loew.

For detailed account see Slingerland, Bul. 172, Cornell Univ. Agr. Exp. Sta., 41 pp., 6 figs., 1899; Chittenden, Bul. 44, Div. Ent., U. S. Dept. Agric., pp. 70–75, 1904.

EXHIBIT: Adult.

INSECTS INJURIOUS TO PEAR.

(Many of the insects injuring the apple will be found attacking the pear.)

THE FRUIT-TREE BARK-BEETLE.

Scolytus rugulosus Ratz.

For general account see Chittenden, Cir. 29, Div. Ent., U. S. Dept. Agric., 1898.

EXHIBIT: Adult, work, and figure.

PEAR-BLIGHT BEETLE; SHOT-BORER.

Xyleborus pyri Peck.

(Formerly *X. dispar.*)

For general account see Hubbard, Bul. 7, n. s., Div. Ent., U. S. Dept. Agric., pp. 22–23, 1897.

EXHIBIT: Adult, work, and figure.

THE PEAR BLISTER MITE.

Eriophyes pyri Pagenst.

For detailed account see Slingerland, Bul. 61, Cornell Univ. Agr. Exp. Sta., pp. 317–528, figs., 1893.

EXHIBIT: Work and figure.

THE PEAR PSYLLA.

Psylla pyri Linn.

(Formerly *P. pyricola.*)

For general accounts see Slingerland, Bul. 44, Cornell Univ. Agr. Sta., 1892; Marlatt, Cir. 7, Div. Ent., U. S. Dept. Agric., 1895.

EXHIBIT: Adult and figure.

THE PEAR SLUG.

Eriocampoides limacina Retz.

(Formerly *Eriocampa cerasi.*)

For general account see Marlatt, Cir. 28, Div. Ent., U. S. Dept. Agric., 1897.

EXHIBIT: Adult, work, and figure.

THE SCURFY SCALE.

Chionaspis furfura Fitch.

(Food plants: Apple, cherry, currant, elm, pear, etc.)
For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 217–219, 1903; Howard, Yearbook, U. S. Dept. Agric., 1894, pp. 259–261, figs.; Banks, Bul. 34, Div. Ent., U. S. Dept. Agric., p. 14, 1902.
EXHIBIT: Infested twig.

SINUATE PEAR-BORER.

Agrilus sinuatus Ol.

For general accounts see Smith, Rpt. Entom. N. J. Agr. Exp. Sta. f. 1894, pp. 556–561, 1895; Banks, Bul. 34, Div. Ent., U. S. Dept. Agric., pp. 40–41, 1902.
EXHIBIT: Adult and figure.

INSECTS INJURIOUS TO PLUM.

THE PLUM CURCULIO.

Conotrachelus nenuphar Hbst.

For general account and bibliography see Lintner, 7th Rpt. N. Y. St. Ent., pp. 288–296, 1891.
EXHIBIT: Adult, figure, and enemies, *Aspidoglossa subangulata* Chd., *Chauliognathus pennsylvanicus* DeG., *Harpalus caliginosus* Fab., and parasite *Sigalphus curculionis* Fitch.

THE PLUM GOUGER.

Anthonomus scutellaris Lec.

(Formerly *Coccotorus prunicida* Walsh.)
For general accounts see Riley and Howard, Insect Life, Vol. II, pp. 258–259, 1890; Gillette, Bul. 47, Colo. Agr. Exp. Sta., pp. 20–22, 1898.
EXHIBIT: Adult, work, and figure.

THE HOP APHIS.

Phorodon humuli Schr.

(Attacks hop and plum.)
For full life history see Riley, Cir. 2, Div. Ent., U. S. Dept. Agric., 1891.
EXHIBIT: Adult and work.

FORBES' SCALE; CHERRY SCALE.

Aspidiotus forbesi Johns.

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 259–260, 1903.
EXHIBIT: Infested twig.

INSECTS INJURIOUS TO GRAPE.

For the more important grape insects see Marlatt, Farmers' Bul. 70, U. S. Dept. Agric., 1898; Saunders, Insects Injurious to Fruits, 2d edition, pp. 227–302, 1900; Bruner, Nebr. State Hortic. Soc. Rept. f. 1895, pp. 69–162, 1896.

INJURING THE ROOTS.

THE TILE-HORNED PRIONUS.

Prionus imbricornis Linn.

For general account of *Prionus* species see Lugger, 5th Rpt. St. Ent. Minn., pp. 110–111, 1899.
EXHIBIT: Adult.

THE GRAPEVINE ROOT-BORER.

Memythrus polistiformis Harr.

(Formerly *Sciapteron.*)
For general account see Lugger, 4th Rpt. St. Ent. Minn., pp. 55–57, 1899.
EXHIBIT: Figures.

INJURING LEAVES AND ROOTS.

GRAPE PHYLLOXERA.

Phylloxera vastatrix Planch.

For general article see Marlatt, Farmers' Bul. 70, U. S. Dept. Agric., pp. 4–9, figs., 1898.
EXHIBIT: Work and figure.

INJURING THE STEMS AND BRANCHES.

COTTONY MAPLE SCALE.

Pulvinaria innumerablis Rathv.

(Foot-plants: Alder, apple, box-elder, elm, grape, linden, maples, pear, willow, etc.)
For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 134–135, 1903; Howard, Bul. 22, n. s., Div. Ent., U. S. Dept. Agric., pp. 8–16, figs. 4, 1900.
EXHIBIT: Infested twig.

THE GRAPE SCALE.

Aspidiotus uvæ Comst.

(Food-plants: Ampelopsis, grape, hickory.)
For bibliography see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., p. 280, 1903.
EXHIBIT: Infested twig.

THE APPLE TWIG-BORER.

Amphicerus bicaudatus Say.

For general account see Marlatt, Farmers' Bul. 70, U. S. Dept. Agric., pp. 11–13, figure, 1898.
EXHIBIT: Adult and figure.

RED-SHOULDERED TWIG-BORER.

Sinoxylon basilare Say.

For general account see Lugger, 5th Rpt. St. Ent. Minn., pp. 70–72, 1899.
EXHIBIT: Adult and figure.

THE SNOWY TREE-CRICKET.

Œcanthus niveus DeG.

For general account see Lugger, 3d Rpt. St. Ent. Minn., pp. 269–271, 1898.
EXHIBIT: Adult and figure.

ŒCANTHUS LATIPENNIS Riley.

For brief article see Lugger, 3d Rpt. St. Ent. Minn., p. 273, 1898.
EXHIBIT: Adult.

GRAPE-VINE ROOT-WORM.

Fidia viticida Walsh.

For life history and bibliography see Felt, Bul. 72, N. Y. St. Museum, 1903, 55 pp., with colored plate.
EXHIBIT: Adult and figure.

GRAPE-VINE FIDIA.

Fidia longipes Mels.

EXHIBIT: Adult.

INJURING THE LEAVES.

ACHEMON SPHINX.

Pholus achemon Dru.

(Formerly *Philampelus.*)
For general account see Lugger, 4th Rpt. State Ent. Minn., pp. 38–40, 1899.
EXHIBIT: Larva and adult.

GRAPE-VINE HOG-CATERPILLAR.

Ampelophaga myron Cram.

For general account see Lugger, 4th Rpt. State Ent. Minn., pp. 42–45, 1899.
EXHIBIT: Larva and adult.

ABBOT'S SPHINX.

Sphecodina abbotii Swaine.

(Formerly *Thyreus.*)
For general account see Lugger, 4th Rpt. St. Ent. Minn., pp. 32–33, 1899.
EXHIBIT: Larva and adult.

LARGE BEAUTIFUL WOOD NYMPH.

Euthisanotia grata Fab.

(Formerly *Eudryas.*)
For general account see Lugger, 4th Rpt. St. Ent. Minn., pp. 69–71, 1899.
EXHIBIT: Larva and adult.

SMALL BEAUTIFUL WOOD NYMPH.

Euthisanotia unio Hübn.

For general account see Lugger, 4th Rpt. St. Ent. Minn., pp. 71–72, 1899.
EXHIBIT: Larva and adult.

EIGHT-SPOTTED FORESTER.

Alypia octomaculata Fab.

For general account see Lugger, 4th Rpt. St. Ent. Minn., pp. 66–67, 1899.
EXHIBIT: Larva and adult.

SOCIAL GRAPE CATERPILLAR.

Harrisina americana Guer.

(Formerly *Procris.*)
For general account see Lugger, 4th Rpt. St. Ent. Minn., pp. 72–74, 1899.
EXHIBIT: Adult and figure.

GRAPE LEAF-FOLDER.

Desmia funeralis Hübn.

For general account see Marlatt, Farmers' Bul. 70, U. S. Dept. Agric., pp. 16–17, 1898.
EXHIBIT: Larva, adult, and work.

GRAPE-VINE PLUME-MOTH.

Oxyptilus periscelidactylus Fitch.

For general article see Lugger, 4th Rpt. St. Ent. Minn., pp. 221–222, 1899; for bibliography and article see Lintner, 12th Rpt. St. Ent. N. Y., pp. 218–222, 1897.
EXHIBIT: Larva and adult.

GRAPE-VINE SAW-FLY.

Blennocampa pygmæa Say.

For general articles see Harris, Insects Injurious to Vegetation, pp. 522–525; Beach, Lowe, and Stewart, Bul. 170, N. Y. Agric. Expt. Sta., p. 417, 1899.
EXHIBIT: Adult and figure.

GRAPE-VINE FLEA-BEETLE.

Haltica chalybea Ill.

For general articles see Marlatt, Farmers' Bul. 70, U. S. Dept. Agric., pp. 13–14, 1898; Slingerland, Bul. 157, Cornell Univ. Agr. Expt. Sta., N. Y., 1898. For additional food plants see Lugger, 5th Rpt. St. Ent. Minn., pp. 157–159, 1899.
EXHIBIT: Adult and figure.

THE GRAPE-VINE COLASPIS.

Colaspis brunnea Fab.

For general article see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 13–14, 1903.
EXHIBIT: Adult.

THE VARIED ANOMALA.

Anomala varians Burm.

EXHIBIT: Adult.

THE GRAPE-VINE LEAF-HOPPER.

Typhlocyba comes Say.

For general article see Marlatt, Farmers' Bul. 70, U. S. Dept. Agric., pp. 18–20, 1898, under *Typhlocyba vitifex*. For full life history and general account see Slingerland, Bul. 215, Cornell Univ. Agr. Expt. Sta., 1904.
EXHIBIT: Adult and figure.

THE WAVED SHARPSHOOTER.

Oncometopia undata Fab.

(Formerly *Proconia*.)
For general article see Lugger, 6th Rpt. St. Ent. Minn., pp. 136–137, 1900.
EXHIBIT: Adult.

INJURING THE FRUIT.

THE GRAPE-SEED WORM.

Evoxysoma vitis Saunders.

(Formerly *Isosoma*.)
For general account see Saunders, Insects Injurious to Fruits, 2d ed., pp. 296–297, 1900.
EXHIBIT: Adult.

THE GRAPE FRUIT-MOTH.

Polychrosis botrana Schiff.

(Formerly *Eudemis*.)
For general article see Marlatt, Farmers' Bul. 70, U. S. Dept. Agric., pp. 20–22, 1898.
EXHIBIT: Adult and figure.

THE GRAPE SEED-WEEVIL.

Craponius inæqualis Say.

For general accounts see Saunders, Insects Injurious to Fruits, 2d ed., pp. 300–301, 1900; Lintner, 9th Rpt. N. Y. St. Ent., pp. 364–365, 1893.
EXHIBIT: Adult and figure.

INSECTS INJURIOUS TO STRAWBERRY.

For general articles treating of these insects see Forbes, 13th Rpt. Ill. St. Ent., pp. 60–180, 1884; Saunders, Insects Injurious to Fruits, 2d ed., pp. 321–335, 1900.

INJURING THE ROOTS AND CROWN.

THE STRAWBERRY CROWN-GIRDLER.

Otiorhynchus ovatus Linn.

For brief bibliography and account see Lintner, 10th Rpt. St. Ent. N. Y., pp. 416–419, 1895.
EXHIBIT: Adult.

THE STRAWBERRY CROWN-BORER.

Tyloderma fragariæ Riley.

For detailed accounts see Forbes, 12th Rpt. Ill. St. Ent., pp. 64–75, 1883; 13th Rpt., p. 142, 1884.
EXHIBIT: Adult, work, and figure.

STRAWBERRY CROWN MOTH.

Ægeria rutilans Hy. Edw.

(Formerly *Sesia.*)
For general account see Chittenden, Bul. 23, n. s., Div. Ent., U. S. Dept. Agric., pp. 85–90, 1900.
EXHIBIT: Adult, pupa, and work.

THE SPOTTED STRAWBERRY LEAF-BEETLE.

Typophorus canellus Fab.

For general account see Forbes, 13th Rpt. St. Ent. Ill., pp. 159–163, 1884.
EXHIBIT: Adult.

INJURING THE ROOTS.

WHITE GRUB; JUNE BEETLE.

Lachnosterna arcuata Sm.

For general account see Chittenden, Bul. 27, n. s., Div. Ent., U. S. Dept. Agric., pp. 74–76, 1901.
EXHIBIT: Adult and figure.

THE STRAWBERRY ROOT-BORER.

Graphops nebulosus Lec.

For brief notice see Garman, Bul. 31, Ky. Agric. Exp. Sta., p. 23, 1890.
EXHIBIT: Adult.

INJURING THE LEAVES.

THE STRAWBERRY FALSE-WORM.

Harpiphorus maculatus Nort.

For general account see Harrington, Insect Life, Vol. II, pp. 227–228, 1890.
EXHIBIT: Larva, pupa, adult, work, and figure.

THE STRAWBERRY LEAF-CHAFER.

Diplotaxis frondicola Say.

For brief account see Kridelbaugh, Ann. Rpt. Ia. St. Hort. Soc., 1871, p. 161, 1872
EXHIBIT: Adult and work.

THE STRAWBERRY FLEA-BEETLE.

Haltica ignita Ill.

For general account see Chittenden, Bul. 23, n. s., Div. Ent., U. S. Dept. Agric., pp. 70–78, 1900.
EXHIBIT: Adult.

THE ROSE LEAF-BEETLE.

Nodonota puncticollis Say.

For general account see Chittenden, Bul. 7, n. s., Div. Ent., U. S. Dept. Agric., pp. 60–61, 1897.
EXHIBIT: Adult.

THE DUSKY PLANT-BUG.

Calocoris rapidus Say.

For short account see Lugger, 1st Rpt. St. Ent. Minn., p. 65, 1900.
EXHIBIT: Adult.

RASPBERRY LEAF-ROLLER.

Exartema permundana Clem.

For general account see Packard, 5th Rpt. U. S. Ent. Comm., pp. 312–313, 1890.
EXHIBIT: Adult.

THE STRAWBERRY LEAF-ROLLER.

Ancylis comptana Fröhl.

(Formerly *Phoxopteris.*)
For general account see Smith, Bul. 149, N. J. Agric. Expt. Sta., pp. 3–12, 1901.
EXHIBIT: Larva, pupa, adult, and figure.

THE SMEARED DAGGER.

Apatela oblinita S. & A.

(Formerly *Acronycta.*)
For general account see Packard, 5th Rpt. U. S. Ent. Comm., pp. 567–568, 1890.
EXHIBIT: Larva, adult, and figure.

INJURING THE BUDS AND STEMS.

THE STRAWBERRY WEEVIL.

Anthonomus signatus Say.

(Lays eggs in buds and severs stems.)
For general account see Chittenden, Cir. 21, Div. Ent., U. S. Dept. Agric., 1897.
EXHIBIT: Adult, work, figure, and the parasites *Calyptus tibiator* Cr. and *Catolaccus incertus* Ashm.

INSECTS INJURIOUS TO BLACKBERRY AND RASPBERRY.

For general articles see Webster, Bul. 45, Ohio Agric. Expt. Sta., pp. 151–217, 1893; Saunders, Insects Injurious to Fruits, 2d edit., pp. 303–320, 1900.

INJURING THE ROOTS.

THE RASPBERRY ROOT-BORER.

Bembecia marginata Harr.

For general account see Smith, Spec. Bul. N, N. J. Agric. Expt. Sta., pp. 9–12, 1891.
EXHIBIT: Larva and adult.

INJURING THE STEMS.

BLACKBERRY GALL-MAKER.

Diastrophus turgidus Bass.

(Formerly *D. nebulosus* O. S.)
For brief article see Saunders, Insects Injurious to Fruits, 2d ed., pp. 318–319, 1900.
EXHIBIT: Adult and figure.

RASPBERRY CANE-BORER.

Oberea bimaculata Ol.

For bibliography and general account see Lintner, 5th Rpt. N. Y. St. Ent., pp. 231–233, 1889.
EXHIBIT: Adult and work.

THE SNOWY TREE-CRICKET.

Œcanthus niveus DeG.

For general account see Lugger, 3d Rpt. St. Ent. Minn., pp. 269–271, 1898.
EXHIBIT: Adult, work, and figure.

RED-NECKED CANE-BORER.

Agrilus ruficollis Fab.

For general account see Smith, Spec. Bul. N, N. J. Agric. Expt. Sta., pp. 4–8, 1891.
EXHIBIT: Adult, work, and figure.

INJURING THE LEAVES.

THE RASPBERRY SAWFLY.

Monophadnoides rubi Harris.

(Formerly *Monophadnus.*)
For bibliography and general account see Lowe, Bul. 150, N. Y. Agric. Expt. Sta., pp. 249–262, pls. IV–VI, 1898.
EXHIBIT: Larva, adult, and work.

RASPBERRY LEAF-ROLLER.

Exartema permundana Clem.

For general account see Packard, 5th Rpt. U. S. Ent. Comm., pp. 312–313, 1890.
EXHIBIT: Adult.

THE FALL WEBWORM.

Hyphantria cunea Dru.

(Feeds on leaves of various trees, shrubs, and vines.)
For general account see Howard, Farmers' Bul. 99, U. S. Dept. Agric., pp. 20–25, 1899.
EXHIBIT: Adult and figure.

THE SMEARED DAGGER.

Apatela oblinita S. & A.

(Formerly *Acronycta.*)
For general account see Packard, 5th Rpt. U. S. Ent. Comm., pp. 567–568, 1890.
EXHIBIT: Larva and adult.

STRAWBERRY LEAF-ROLLER.

Ancylis comptana Fröhl.

(Formerly *Phoxopteris.*)
For general account see Smith, Bul. 149, N. J. Agric. Expt. Sta., pp. 3–12, 1901.
EXHIBIT: Pupa and adult.

THE FOUR-MARKED LEAF-BEETLE.

Cryptocephalus quadrimaculatus Say.

EXHIBIT: Adult.

THE HOODED PLANT-BUG.

Euthoctha galeator Fab.

For brief notices see Riley and Howard, Insect Life, Vol. I, p. 54, 1888; p. 366, 1889.
EXHIBIT: Eggs, nymph, and adult.

INJURING THE FRUIT.

RASPBERRY SPAN-WORM.

Synchlora ærata Fab.

(Formerly *S. glaucaria.*)
For bibliography and general account see Lintner, 8th Rpt. St. Ent. N. Y., pp. 129–133, 1893.
EXHIBIT: Pupa, adult, and figure.

THE LITTLE NEGRO BUG.

Corimelæna pulicaria Germ.

For general account see Lintner, 8th Rpt. St. Ent. N. Y., pp. 213–214, 1893.
EXHIBIT: Adult and figure.

INSECTS INJURIOUS TO CURRANT AND GOOSEBERRY.

For general article on insects affecting currant and gooseberry see Piper and Doane, Bul. 36, Washington Agr. Expt. Sta., 1898.

INJURING THE STEMS.

THE TERRAPIN SCALE.

Eulecanium nigrofasciatum Perg.

(Food plants: Apple, birch, linden, maple, peach, plum, sycamore; formerly *Lecanium.*)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., p. 191, 1903; Pergande, Bul. 18, n. s., Div. Ent., U. S. Dept. Agr., pp. 26–29, figs., 1898.

Exhibit: Infested twig.

THE NATIVE CURRANT STEM-BORER.

Psenocerus supernotatus Say.

For general account see Lugger, 5th Rpt. State Entom. of Minnesota, pp. 121–122, 1899.

Exhibit: Adult and work.

CURRANT CLEARWING MOTH; IMPORTED CURRANT-BORER.

Ægeria tipuliformis Clerck.

For general account see Lugger, 4th Rpt. State Entom. Minn., pp. 60–64, 1899.

Exhibit: Adult and work.

PUTNAM'S SCALE; CRANBERRY SCALE.

Aspidiotus ancylus Putn.

(Food plants: Apple, apricot, box-elder, cottonwood, cranberry, elm, hemlock, maple, oak, peach, pear, plum, etc.)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 252–253, 1903.

Exhibit: Infested twig.

THE SAN JOSE SCALE.

Aspidiotus perniciosus Comst.

(Food plants: Almond, apple, apricot, birch, black walnut, black currant, catalpa, chestnut, crab-apple, crab-grass, cherry, grape, hickory, oak, peach, pear, persimmon, plum, poplar, prune, Rocky Mountain cherry, rose, silver maple, willow, and many other plants.)

For bibliography and food plants see Fernald, Cat. Coccidæ of World, Bul. 88, Mass. Agr. Coll., pp. 271–275, 1903; Howard and Marlatt, Bul. 3, n. s., Div. Ent., U. S. Dept. Agr., 1896. 80 pp.

Exhibit: Infested twig.

THE BLACK GOOSEBERRY BORER.

Xylocrius agassizii Lec.

For general accounts see Fletcher, Rpt. of Ent. and Bot. for 1898, Can. Dept. Agric., pp. 207-210, 1899; Chittenden, Bul. 23, n. s., Div. Ent., U. S. Dept. Agric., pp. 90–92, 1900.

Exhibit: Adult and figure.

INJURING THE LEAVES.

GOOSEBERRY SPANWORM.

Cymatophora ribearia Fitch.

(Formerly *Eufitchia.*)

For short account see Lugger, 4th Rpt. State Ent. Minn., pp. 184–186, 1899.

Exhibit: Eggs, larva, pupa, adult, and figure.

IMPORTED CURRANT WORM.

Pteronus ribesii Scop.

(Formerly *Nematus ventricosus.*)
For bibliography and technical description see Marlatt, Tech. Series 3, Div. Entom., U. S. Dept. Agric., pp. 61–63, 1896.
EXHIBIT: Adult, figure, and an enemy, *Podisus placidus* Uhl.

THE NATIVE CURRANT WORM.

Pristiphora grossulariæ Walsh.

For bibliography see *Gymnonychus appendiculatus* Htg., Marlatt, Tech. Series 3, Div. Entom., U. S. Dept. Agric., p. 124, 1896.
EXHIBIT: Adult and figure.

THE CRANBERRY LOOPER.

Xanthotype crocataria Fab.

For general account see Lugger, 4th Rpt. State Ent. Minn., pp. 178–179, 1899.
EXHIBIT: Larva and adult.

POLYGONIA PROGNE Cram.

(Formerly *Grapta.*)
For general account see Packard, 5th Rpt. U. S. Entom. Comm., pp. 241, 1890.
EXHIBIT: Larva, chrysalis, and adult.

INJURING THE FRUIT.

GOOSEBERRY FRUIT-WORM.

Zophodia grossulariæ Pack.

For general account see Lugger, 4th Rpt. State Ent. Minn., pp. 214–216, 1899.
EXHIBIT: Pupa and adult.

INSECTS INJURIOUS TO GRASSES.

APANTESIS NAIS Dru.

(Formerly *Arctia.*)
For account see Beutenmüller, "Cat. Lep. N. Y.," Ann. Acad. N. Y., p. 206, 1890.
EXHIBIT: Adult.

GRANULATED CUTWORM.

Feltia annexa Fr.

For general account see Riley, Rpt. U. S. Dept. Agric., 1884, pp. 291–292, 1885. For description and stages see French, Can. Ent., Vol. XIV, pp. 207–210, 1882.
EXHIBIT: Adult and figure.

HOMOPTERA EDUSA Dru.

EXHIBIT: Larva, pupa, and adult.

NORTHERN GRASS WORM.

Drasteria erechtea Cram.

For general account see Slingerland, Insect Life, Vol. V, pp. 87–88, 1892.
EXHIBIT: Larva, pupa, adult, and work.

THE ARMY WORM.

Heliophila unipuncta Harv.

(Formerly *Leucania.*)
For bibliography and life history see Lintner, 12th Rpt., St. Ent. N. Y., pp. 190–214, 1896.
EXHIBIT: Larva, pupa, adult, and figure.

THE SALT-MARSH CATERPILLAR.

Estigmene acræa Dru.

(Formerly *Leucarctia.*)
For general account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 43–44, 1903.
EXHIBIT: Larva and adult.

FALL ARMY WORM.

Laphygma frugiperda S. & A.

For full bibliography and life history see Chittenden, Bul. 29, n. s., Div. Ent., U. S. Dept. Agric., pp. 40–45, 1901.
EXHIBIT: Larva, pupa, adult, and figure.

THE ISABELLA TIGER MOTH.

Isia isabella S. & A.

(Formerly *Pyrrharctia.*)
For general account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 44–45, 1903.
EXHIBIT: Larva, cocoon, adult, and figure.

THE VAGABOND CRAMBUS.

Crambus vulgivagellus Clem.

For general accounts see Lintner, 1st Rpt. St. Ent. N. Y., pp. 127–151, 1882; Felt, Bul. 64, Cornell Univ. Agric. Expt. Sta., pp. 69–71, 1894.
EXHIBIT: Eggs, adult, work, figure, and parasite *Lampronotus frigida* Cr.

THE SPOTTED CUTWORM.

Noctua c-nigrum Linn.

For general account and life history see Chittenden, Bul. 27, n. s., Div. Ent., U. S. Dept. Agric., pp. 54–58, 1901.
EXHIBIT: Pupa and adult.

WHITE GRUB; MAY BEETLE.

Lachnosterna fusca Fröh.

For account of white grubs see Forbes, 18th Rpt. St. Ent. Ill., pp. 109–145, 1894.
EXHIBIT: Adult.

WHITE GRUB; JUNE BEETLE.

Lachnosterna arcuata Smith.

For general account see Chittenden, Bul. 27, n. s., Div. Ent., U. S. Dept. Agric., pp. 74–76, 1901.
EXHIBIT: Adult and figure.

THE DISTENDED MAY BEETLE.

Lachnosterna farcta Lec.

For short notices see Comstock, Rpt. U. S. Dept. Agric. 1879, pp. 247–248, Pl. V, fig. 5, 1880, and Howard, Bul. 22, n. s., Div. Ent., U. S. Dept. Agric., p. 107, 1900.
EXHIBIT: Adult.

THE BLUE-GRASS BILL-BUG.

Sphenophorus parvulus Gyll.

For article see Forbes, 16th Rpt. St. Ent. Ill., pp. 63, 65, 1894.
EXHIBIT: Adult.

THE LESSER LOCUST.

Melanoplus atlanis Riley.

For bibliography and general account see Scudder, Proc. U. S. N. M., Vol. XX, pp. 178–183, pl. 12, fig. 7, 1897; Riley, Bul. 25, Div. Ent., U. S. Dept. Agric., pp. 26–27, 1891.
EXHIBIT: Adult.

THE CAROLINA LOCUST.

Dissosteira carolina Linn.

For short account see Forbes and Hart, Bul. 60, Ill. Agric. Expt. Sta., pp. 479–480, 1900.
EXHIBIT: Nymph and adult.

THE TIMOTHY PLANT-BUG.

Oncognathus binotatus Fab.

For general account see Howard, Insect Life, Vol. V, pp. 90–92, 1892.
EXHIBIT: Adult.

THE GREATER WHEAT-STEM MAGGOT.

Meromyza americana Fitch.

For general article see Webster, Bul. 42, Div. Ent., U. S. Dept. Agric., pp. 43–51, 1903.
EXHIBIT: Adult and figure.

LEATHER JACKET; MEADOW WORM.

Tipula bicornis Loew.

For general account see Forbes, 16th Rpt. St. Ent. Ill., pp. 78–83, 1890.
EXHIBIT: Adult and figure.

INSECTS INJURIOUS TO ALFALFA.

THE VARIEGATED CUTWORM.

Peridroma saucia Hbn.

For general bibliography and life history see Chittenden, Bul. 29, n. s., Div. Ent., U. S. Dept. Agric., pp., 46–64, 1901.
EXHIBIT: Larva and adult.

THE FALL ARMY WORM.

Laphygma frugiperda S. & A.

For full bibliography and life history see Chittenden, Bul. 29, n. s., Div. Ent., U. S. Dept. Agric., pp. 40–45, 1901.
EXHIBIT: Larva and adult.

THE ALFALFA WEBWORM.

Loxostege commixtalis Walk.

(Formerly *L. cereralis* Zell.)
For account of *Loxostege* sp. attacking alfalfa see Insect Life, Vol. VI, p. 36, 1893.
EXHIBIT: Adult.

THE TWO-STRIPED LOCUST.

Melanoplus bivittatus Say.

For bibliography and general account see Scudder, Proc. U. S. N. M., Vol. XX, pp. 363–368, pl. 24, fig. 5, 1897.
EXHIBIT: Adult and figure.

THE DIFFERENTIAL LOCUST.

Melanoplus differentialis Thos.

For bibliography and general account see Scudder, Proc. U. S. N. M., Vol. XX, pp. 349–354, pl. 23, figs. 3 and 4, 1897; also Morgan, Bul. 30, n. s., Div. Ent. U. S. Dept. Agric., pp. 7–26, 1901.
EXHIBIT: Adult and figure.

THE ROCKY-MOUNTAIN LOCUST.

Melanoplus spretus Thos.

For bibliography and general account see Scudder, Proc. U. S. N. M., Vol. XX, pp. 184–190, pl. 12, fig. 8, 1897.
EXHIBIT: Adult.

THE AMERICAN LOCUST.

Schistocerca americana Dru.

For life history and general account see Howard, Insect Life, Vol. VII, pp. 220–229, 1897; also Morgan, Bul. 30, n. s. Div. Ent., U. S. Dept. Agric., p. 27, 1901.
EXHIBIT: Adult.

THE CLOVER-SEED CHALCIS-FLY.

Bruchophagus funebris How.

For general account see Hopkins, Bul. 6, n. s., Div. Ent. U. S. Dept. Agric., p. 73, 1896, and Bul. 17, n. s., p. 45, 1898; Titus, Bul. 44, pp. 77–80, 1904.
EXHIBIT: Adult and work.

INSECTS INJURIOUS TO CLOVER.

For list of clover insects, and short articles on several important species, see Bruner and Hunter, Rpt. St. Bd. Agr. Nebr., pp. 240–285, 1898.

INJURING THE ROOTS.

THE CLOVER ROOT-BORER.

Hylastinus trifolii Müll.

(Formerly *Hylastes.*)
For general articles see Riley, Rpt. U. S. Dept. Agr., f. 1878, pp. 248–250, 1879.
EXHIBIT: Adult, work, figure, and enemy, *Telephorus bilineatus* Say.

INJURING THE STEM.

THE CLOVER STEM-BORER.

Languria mozardi Latr.

For general account see Weed, Bul. Ohio Agr. Expt. Sta., 2d series, Vol. III, No. 8, p. 235, 1890.
EXHIBIT: Adult.

INJURING THE LEAVES.

THE CLOVER MITE.

Bryobia pratensis Garm.

For general article see Garman, 14th Rpt. St. Ent. Ill., p. 73, 1885; Bruner, Rpt. Nebr. St. Bd. Agric. f. 1898, pp. 280–284, 1899; Marlatt, Cir. 19, Div. Ent., U. S. Dept. Agric., 1897.
EXHIBIT: Figure.

CLOVER ALEYRODES.

Aleyrodes sp.

EXHIBIT: Adult and work.

THE WHEAT THRIPS.

Thrips tritici Fitch.

For citations to literature see Lintner, 11th Rpt. N. Y. St. Ent., pp. 247–250, 1896.
EXHIBIT: Figure.

THE CLOVER-LEAF WEEVIL.

Phytonomus punctatus Fab.

For general account see Lintner, 1st Rpt. St. Ent. N. Y., pp. 247–253, 1883; Sanderson, Insects injurious to staple crops, pp. 177–179, 1902.
EXHIBIT: Larva, cocoon, adult, work, figure, and enemy, *Collops 4-maculatus* Fab.

THE GRAPE-VINE COLASPIS.

Colaspis brunnea Fab.

For general article see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 13–14, 1903.
EXHIBIT: Adult.

THE 12-SPOTTED CUCUMBER BEETLE.

Diabrotica duodecimpunctata Ol.

For general account and remedies see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 12–13, 1903; Quaintance, Bul. 26, n. s., Div. Ent., U. S. Dept. Agric., pp. 35–40, 1900.
EXHIBIT: Adult, figure, and parasite, *Celatoria diabroticæ*.

WESTERN CORN ROOT-WORM.

Diabrotica longicornis Say.

For general account see Forbes, 12th Rpt. St. Ent. Ill., pp. 10–31, figs. 1–5, 1883.
EXHIBIT: Adult.

THE IMBRICATED SNOUT-BEETLE.

Epicærus imbricatus Say.

For general account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 28–29, 1903; Bul. 19, n. s., pp. 62–67, 1899.
EXHIBIT: Adult.

THE GIBBOUS JUNE-BEETLE.

Lachnosterna gibbosa Burm.

For general account of white grubs see Forbes, 18th Rpt. St. Ent. Ill., pp. 109–144, 1894.
EXHIBIT: Adult.

THE FLAVESCENT CLOVER WEEVIL.

Sitones flavescens Marsh.

For brief account see Osborn and Gossard, Bul. 14, Ia. Agric. Expt. Sta., pp. 177–178, 1891.
EXHIBIT: Adult.

GRAPHORHINUS VADOSUS Say.

For brief account see Webster, Amer. Nat., Vol. XVI, p. 746, 1882.
EXHIBIT: Adult.

THE ASH-GRAY BLISTER BEETLE.

Macrobasis unicolor Kby.

For general account see Chittenden, Yearbook, U. S. Dept. Agric., 1898, pp. 249–250.
EXHIBIT: Adult.

FOUR-LINED PLANT-BUG.

Pœcilocapsus lineatus Fab.

For general accounts see Lintner, 1st Rpt. St. Ent. N. Y., pp. 271–281, 1883; Slingerland, Bul. 58, Cornell Univ. Agr. Expt. Sta., pp. 207–239, 1893.
EXHIBIT: Adult.

THE TARNISHED PLANT-BUG.

Lygus pratensis Linn.

For general account see Riley, Rpt. U. S. Dept. Agric. f. 1884, pp. 312–315, 1885.
EXHIBIT: Adult.

THE CLOVER-LEAF MIDGE.

Dasyneura trifolii Loew.

(Formerly *Cecidomyia.*)
For brief articles see Bruner, Rpt. St. Bd. Agric. Nebr., 1898, pp. 250–251, 1899; Comstock, Rpt. U. S. Dept. Agric., 1879, pp. 197–199, 1880.
EXHIBIT: Cocoon, adult, and work.

THE RED-BANDED LEAF-ROLLER.

Eulia triferana Walk.

(Formerly *Lophoderus.*)
For brief accounts see Lugger, 4th Rpt. State Ent. Minn., p. 231, 1899; Forbes, 14th Rpt. St. Ent. Ill., pp. 20–21, 1885.
EXHIBIT: Pupa and adult.

THE RUSTY-BROWN TORTRIX.

Platynota flavedana Clem.

For general account see Lugger, 4th Rpt. St. Ent. Minn., pp. 231–232, 1899.
EXHIBIT: Eggs, pupa, and adult.

THE SULPHUR-COLORED TORTRIX.

Epagoge sulfureana Clem.

(Formerly *Tortrix* and *Dichelia.*)
For brief account see Lugger, 4th Rpt. St. Ent. Minn., pp. 232–233, 1899. For bibliography see Forbes, 14th Rpt. St. Ent. Ill., pp. 17–20, 1885.
EXHIBIT: Pupa, adult, and work.

CŒLOSTATHMA DISCOPUNCTANA Clem.

(Formerly *Amphisa.*)
For brief notice see Comstock, Rpt. U. S. Dept. Agric. f. 1880, p. 258, 1881.
EXHIBIT: Pupa and adult.

THE FALL ARMY WORM.

Laphygma frugiperda S. & A.

For full life history and bibliography see Chittenden, Bul. 29, n. s., Div. Ent. U. S. Dept. Agric., pp. 13–45, 1901.
EXHIBIT: Adult.

ANAPHORA POPEANELLA Clem.

For general account see Riley and Howard, Insect Life, Vol. III, pp. 27–28, 1890.
EXHIBIT: Adult.

THE OBLIQUE-BANDED LEAF-ROLLER.

Archips rosaceana Harr.

(Formerly *Cacœcia.*)
For general account see Lugger, 4th Rpt. St. Ent. Minn., pp. 226–227, 1899.
EXHIBIT: Pupa and adult.

THE GARDEN WEBWORM.

Loxostege similalis Guen.

For general account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 39–40, 1903.
EXHIBIT: Adult and work.

ARISTOTELIA ROSEOSUFFUSELLA Clem.

(Formerly *Gelechia.*)
For brief reference to food plant see Murtfeldt, Bul. 23, Div. Ent., U. S. Dept. Agric., p. 54, 1891.
EXHIBIT: Pupa and adult.

ECTROPIS CREPUSCULARIA D. and S.

(Has been placed in genera *Cymatophora, Cleora,* and *Boarmia.*)
For brief accounts see Packard, 5th Rpt. U. S. Ent. Comm., p. 371, 1890; Lugger, 4th Rpt. St. Ent. Minn., p. 188, 1899.
EXHIBIT: Adult.

DRASTERIA ERECHTEA Cram.

For general account see Slingerland, Insect Life, Vol. V, pp. 87–88, 1892.
EXHIBIT: Larva, cocoon, pupa, and adult.

THE CHICKWEED GEOMETER.

Hæmatopsis grataria Fab.

For brief notice see Forbes, 14th Rpt. St. Ent. Ill., p. 74, 1885.
EXHIBIT: Adult.

IO MOTH.

Automeris io Fab.

For general account see Lugger, 4th Rpt. State Ent. Minn., pp. 126–129, fig. 130, and pl. 16, fig. 129, 1899.
EXHIBIT: Larva, cocoon, and adult.

CATOPYRRHA DISSIMILARIA Hbn.

(Formerly *Aspilates.*)
EXHIBIT: Adult.

THE GREEN CLOVER WORM.

Plathypena scabra Fab.

(Formerly *Hypena.*)
For accounts see Comstock, Rpt. U. S. Dept. Agric. f. 1879, p. 252, 1880; Chittenden, Bul. 30, n. s., Div. Ent., U. S. Dept. Agric., pp. 44–50, 1901.
EXHIBIT: Larva, pupa, and adult.

THE SMALL WHITE BRISTLY CUTWORM.

Mamestra renigera Steph.

For short account see Forbes, 16th Rpt. St. Ent. Ill., pp. 95–96, 1890.
EXHIBIT: Larva, pupa, and adult.

THE CLOVER CUTWORM.

Mamestra trifolii Rott.

For account see Riley, Rpt. U. S. Dept. Agric. 1883, pp. 123–124, 1883.
EXHIBIT: Larva and adult.

ARMY WORM.

Heliophila unipuncta Harv.

(Formerly *Leucania.*)
For bibliography and life history see Lintner, 12th Rpt. N. Y. St. Ent., pp. 190–214, 1896.
EXHIBIT: Larva, pupa, and adult.

THE VARIEGATED CUTWORM.

Peridroma saucia Hübn.

For general bibliography and life history see Chittenden, Bul. 29, n. s., Div. Ent., U. S. Dept. Agric., pp. 46–64, 1902.
EXHIBIT: Larva, adult, and figure.

THE COMMELINA OWLET MOTH.

Prodenia commelinæ S. & A.

For life history and general account see Chittenden, Bul. 27, n. s., Div. Ent., U. S. Dept. Agric., pp. 59–64, Pl. IV, fig. 1, 1901.
EXHIBIT: Larva, pupa, and adult.

THE DARK-SIDED CUTWORM.

Euxoa messoria Harr.

(Formerly *Carneades.*)
For general account see Riley, Rpt. U. S. Dept. Agric. f. 1884, pp. 290–291, 1885.
EXHIBIT: Larva and adult.

THE SMEARED DAGGER.

Apatela oblinita S. & A.

(Formerly *Acronycta.*)
For general account see Packard, 5th Rpt. U. S. Ent. Comm., pp. 567–568, 1890.
EXHIBIT: Larva, cocoon, and adult.

THE BRONZED CUTWORM.

Nephelodes minians Guen.

For life history and partial bibliography see Lintner, 1st Rpt. St. Ent. N. Y., pp. 99–110, 1882; Riley, Rpt. U. S. Dept. Agric. f. 1890, pp. 244–246, 1891.
EXHIBIT: Larva and adult.

THE CABBAGE LOOPER.

Autographa brassicæ Riley.

(Formerly *Plusia.*)
For general account and life history see Chittenden, Bul. 33, n. s., Div. Ent., U. S. Dept. Agric., pp. 60–69, 1902.
EXHIBIT: Larva, adult, and figure.

THE NAIS TIGER-MOTH.

Apantesis nais Dru.

(Formerly *Arctia.*)
For account see Beutenmuller, "Cat. Lepid. N. Y.," Ann. Acad. N. Y., p. 206, 1890.
EXHIBIT: Adult.

ZEBRA CATERPILLAR.

Mamestra picta Harr.

For general account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 42–43, 1903.
EXHIBIT: Larva and adult.

THE ISABELLA TIGER-MOTH.

Isia isabella S. & A.

(Formerly *Pyrrharctia.*)
For general account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 44–45, 1903.
EXHIBIT: Larva and adult.

THE NORTHERN CLOUDY-WING.

Thorybes pylades Scud.

(Formerly *Eudamus.*)
EXHIBIT: Adult.

THE COMYNTAS BUTTERFLY.

Everes comyntas Godt.

(Formerly *Lycæna.*)
For brief account see Lintner, 4th Rpt. N. Y. St. Ent., p. 137, 1888.
EXHIBIT: Adult.

THE AMERICAN COPPER.

Heodes hypophlæas Bd.

(Formerly *Chrysophanus.*)
EXHIBIT: Adult.

LEMONIAS EDITHA Bd.

(Formerly *Melitæa.*)
EXHIBIT: Figure.

SOUTHERN DOG-FACE BUTTERFLY.

Zerene cæsonia Stall.

(Formerly *Colias.*)
For brief notice see Thomas, 10th Rpt. St. Ent. Ill., p. 78, 1881; Howard, Bul. 7, n. s., Div. Ent., U. S. Dept. Agric., p. 84, 1897.
EXHIBIT: Adult.

THE ORANGE SULPHUR.

Eurymus eurytheme Bd.

(Formerly *Colias.*)
For brief account see French, 7th Rpt. St. Ent. Ill., pp. 147–148, 1878.
EXHIBIT: Larva and adult.

THE YELLOW BUTTERFLY.

Eurymus philodice Godt.

(Formerly *Colias.*)
For brief account see Davis, Bul. 116, Mich. Agr. Expt. Sta., p. 61, 1894.
EXHIBIT: Adult.

THE CLOUDLESS SULPHUR.

Callidryas eubule Linn.

For brief account see French, 7th Rpt. St. Ent. Ill., pp. 147–148, 1878.
EXHIBIT: Larva, pupa, and adult.

THE BLACK-BORDERED YELLOW.

Eurema nicippe Cram.

(Formerly *Terias.*)
For brief account see French, 7th Rpt. St. Ent. Ill., p. 148, 1878.
EXHIBIT: Larva, pupa, and adult.

THE LITTLE SULPHUR.

Eurema euterpe Men.

(Formerly *Terias lisa.*)
For brief account see French, 7th Rpt. St. Ent. Ill., p. 148, 1878.
EXHIBIT: Adult.

OLETHREUTES INSTRUTANA Clem.

EXHIBIT: Adult.

THE CLOVER-HAY WORM.

Hypsopygia costalis Fab.

(Formerly *Asopia* and *Pyralis.*)
For bibliography and general account see Lintner, 11th Rpt. St. Ent. N. Y., pp. 145–151, 1896.
EXHIBIT: Larva and adult.

THE MEAL SNOUT-MOTH.

Pyralis farinalis Linn.

For short account see Chittenden, Farmers' Bul. 45, U. S. Dept. Agric., pp. 10–11, 1897.
EXHIBIT: Larva, pupa, cocoon, and adult.

THE CLOVER APHIS.

Macrosiphum trifolii Perg.

(Attacks dandelion, oats, red clover, strawberry, wheat, etc.)
For general account see Pergande, Bul. 44, Div. Ent., U. S. Dept. Agric., pp. 21–23, 1904.
EXHIBIT: Figure.

THE TWO-STRIPED LOCUST.

Melanoplus bivittatus Say.

For bibliography and general accounts see Scudder, Proc. U. S. N. M., Vol. XX, pp. 363–368, pl. 24, fig. 5, 1897; Riley, Bul. 25, Div. Ent., U. S. Dept. Agric., pp. 31–32, 1891.
EXHIBIT: Adult and figure.

THE LESSER LOCUST.

Melanoplus atlanis Riley.

For bibliography and general accounts see Scudder, Proc. U. S. N. M., Vol. XX, pp. 178–183, pl. 12, fig. 7, 1897; Riley, Bul. 25, Div. Ent., U. S. Dept. Agric., pp. 26–27, 1891.
EXHIBIT: Adult.

THE DIFFERENTIAL LOCUST.

Melanoplus differentialis Thos.

For bibliography and general accounts see Scudder, Proc. U. S. N. M., Vol. XX, pp. 349–354, pl. 23, figs. 3 and 4; Morgan, Bul. 30, n. s., Div. Ent., U. S. Dept. Agric., pp. 7–26, 1901.
EXHIBIT: Adult.

RED-LEGGED LOCUST.

Melanoplus femur-rubrum DeG.

For bibliography and general accounts see Scudder, Proc. U. S. N. M., Vol. XX, pp. 278–285; pl. 1, fig. h; pl. 19, figs. 1–4, 1897; Riley, Bul. 25, Div. Ent., U. S. Dept. Agric., pp. 27–28, 1891.
EXHIBIT: Adult.

THE ROCKY-MOUNTAIN LOCUST.

Melanoplus spretus Thos.

For bibliography and general accounts see Scudder, Proc. U. S. N. M., Vol. XX, pp. 184–190, pl. 12, fig. 8, 1897; Riley, Bul. 25, Div. Ent., U. S. Dept. Agric., pp. 9–26, 1891.
EXHIBIT: Adult.

INJURING THE FLOWERS AND SEEDS.

THE CLOVER-FLOWER MIDGE.

Dasyneura leguminicola Lint

(Formerly *Cecidomyia.*)
For general account see Riley, Rpt. U. S. Dept. Agric., 1878, pp. 250–252, 1879.
EXHIBIT: Cocoon, adult, and figure.

THE CLOVER-SEED CHALCIS-FLY.

Bruchophagus funebris How.

For brief accounts see Hopkins, Bul. 6, n. s., Div. Ent., U. S. Dept. Agric., p. 73, 1896, and Bul. 17, n. s., p. 45, 1898; Titus, Bul. 44, Div. Ent., U. S. Dept. Agric., pp. 77–80, 1904.
EXHIBIT: Adult and work.

THE CLOVER-SEED WORM.

Enarmonia interstinctana Clem.

(Formerly *Grapholitha.*)
For bibliography and general account see Lintner, 11th Rept. St. Ent. N. Y., pp. 152–157, 1896.
EXHIBIT: Pupa, adult, and work.

INSECTS INJURIOUS TO SMALL GRAINS.

For general articles see Howard, Tech. Ser. 2, Div. Ent., U. S. Dept. Agric., 24 pp., 1896; Marlatt, Farmers' Bul. 132, U. S. Dept. Agric., 38 pp., 1901; Webster, Bul. 42, Div. Ent., U. S. Dept. Agric., 62 pp., 1903.

THE LESSER LOCUST.

Melanoplus atlanis Riley.

For bibliography and general account see Scudder, Proc. U. S. N. M., Vol. XX, pp. 178–183, pl. 12, fig. 7, 1897; Riley, Bul. 25, Div. Ent., U. S. Dept. Agric., pp. 26–27, 1891.
EXHIBIT: Nymph and adult.

THE RED-LEGGED LOCUST.

Melanoplus femur-rubrum DeG.

For bibliography and general account see Scudder, Proc. U. S. N. M., Vol. XX, pp. 278–285, pl. 1, fig. h; pl. 19, figs. 1–4. 1897; Riley, Bul. 25, Div. Ent., U. S. Dept. Agric., pp. 27–28, 1891.
EXHIBIT: Nymph and adult.

THE ROCKY MOUNTAIN LOCUST.

Melanoplus spretus Thos.

For bibliography and general account see Scudder, Proc. U. S. N. M., Vol. XX, pp. 184–190, pl. 12, fig. 8, 1897; Riley, Bul. 25, Div. Ent., U. S. Dept. Agric., pp. 9–26, 1891.
EXHIBIT: Nymph, adult, and figure.

THE WESTERN CRICKET.

Anabrus purpurascens Uhl.

For detailed account see Packard, 2d Rpt. U. S. Ent. Comm., pp. 163–178, 1879.
EXHIBIT: Adult.

THE CLEAR-WINGED LOCUST.

Camnula atrox Scudd.

For account of an allied species (*C. pellucida*) see Simpson, Circ. 53, Div. Ent., U. S. Dept. Agric., 1903.
EXHIBIT: Adult.

THE ARMY WORM.

Heliophila unipuncta Harv.

(Formerly *Leucania.*)
For bibliography and life history see Lintner, 12th Rept. St. Ent. N. Y., pp. 190–214, 1896.
EXHIBIT: Larva, pupa, adult, and figure.

FALL ARMY WORM.

Laphygma frugiperda S. & A.

For full bibliography and life history see Chittenden, Bul. 29, n. s., Div. Ent., U. S. Dept. Agric., pp. 40–45, 1901.
EXHIBIT: Larva, pupa, and adult.

STALK BORER.

Papaipema nitela Guen.

(Bores in stems of various plants.)
For general account see Bird, Can. Ent., Vol. XXX, pp. 127–128, 1898
EXHIBIT: Larva, pupa, adult, and work.

WHEAT-HEAD ARMY WORM.

Heliophila albilinea Hbn.

For general account see Riley, 9th Rept. St. Ent. Mo., pp. 50–57, 1877.
EXHIBIT: Pupa, adult, figure, and parasites: *Anomalon apicale* Cress., *Tachina anonyma* Riley.

NUTTALL'S BLISTER BEETLE.

Cantharis nuttalli Say.

For short article see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., p. 27, 1903.
EXHIBIT: Adult.

THE CLAY-COLORED BILL-BUG.

Sphenophorus æqualis Lec.

(Treated as *S. ochreus* Lec. by authors.)
For articles on bill-bugs see Forbes, 16th Rept. St. Ent. Ill., pp. 58–74, 1890; Webster, Insect Life, Vol. II, pp. 132–134, 1889.
EXHIBIT: Adult.

THE GERMAN GRAIN-APHIS.

Macrosiphum cerealis Kalt.

(Attacks barley, chess, meadow, orchard, and velvet grass, oats, rye, and wheat, feeding on ears, racemes, and other parts of plant.)

For general account see Pergande, Bul. 44, Div. Ent., U. S. Dept. Agric., pp. 18–21, 1904.

Exhibit: Figure.

THE ENGLISH GRAIN-APHIS.

Macrosiphum granaria Buck.

(Formerly *Nectarophora* and *Aphis*. Attacks green foxtail, meadow, and orchard grass, oats, red-clover, red top, rye, wheat, and wild rye.)

For general account see Pergande, Bul. 44, Div. Ent., U. S. Dept. Agric., pp. 13–18, 1904.

Exhibit: Figure and work; parasite, *Lysiphlebus testaceipes* Cress. (figure); and enemies, *Anatis 15-punctata* Ol.; *Coccinella sanguinea* Linn.; *Hippodamia parenthesis* Say; *Podabrus tomentosus* Say; *Sphærophoria cylindrica* Say; *Syrphus americanus* Wied.

THE EUROPEAN GRAIN-APHIS.

Siphocoryne avenæ Fab.

(Formerly *Nectarophora* and *Aphis*. Attacks apple, burdock, celery, cnoke-cherry, dogwood, grasses, oats, rye, wheat, and other plants.)

For general account see Pergande, Bul. 44, Div. Ent., U. S. Dept. Agric., pp. 5–13, 1904.

Exhibit: Figure.

THE CHINCH BUG.

Blissus leucopterus Say.

(Injures cane, corn, oats, rye, wheat, etc.)

For bibliography, 1785–1888, see Forbes, App. to 16th Rept. St. Ent. Ill., pp. 1–102, 1894. For general articles see Forbes, 16th Rept. St. Ent. Ill., pp. 1–57, 1894; Webster, Bul. 15, n. s., Div. Ent., U. S. Dept. Agric., 82 pp., 1898.

Exhibit: Eggs, nymph, adult, and figure.

THE GRAIN LEAF-HOPPER.

Diedrocephalus flaviceps Riley.

For account of *D. mollipes* see Osborn & Ball, Bul. 34, Iowa Agric. Expt. Sta., p. 614, 1897.

Exhibit: Adult.

THE DESTRUCTIVE LEAF-HOPPER.

Cicadula exitiosa Uhl.

For general account see Comstock, Rpt. U. S. Comm. Agric., 1879, pp. 191–193, 1880.

Exhibit: Adult.

THE WHEAT SAWFLY.

Dolerus arvensis Say.

For general account see Riley and Marlatt, Insect Life, Vol. IV, pp. 171–172, 1891.

Exhibit: Adult and figure.

THE GRASS SAWFLY.

Pachynematus extensicornis Nort.

(Formerly *Nematus marylandicus*.)

For article under *N. marylandicus* see Riley and Marlatt, Insect Life, Vol. IV, pp. 174–177, 1891.

Exhibit: Adult and figure.

THE WESTERN GRAIN SAWFLY.

Cephus occidentalis Marl.

For short article see Riley and Howard, Insect Life, Vol. II, p. 286, 1890.

Exhibit: Adult, work, and figure.

JOINT-WORMS.

For special articles to four following species see Howard, Tech. Ser. 2, Div. Ent., U. S. Dept. Agric., 24 pp., 1896; also Webster, Bul. 42, Div. Ent., U. S. Dept. Agric., 62 pp., 1903.

GREATER WHEAT-STRAW WORM.

Isosoma grande Riley.

EXHIBIT: Adult and figure.

BARLEY-STRAW WORM.

Isosoma hordei Harr.

EXHIBIT: Adult, work, and figure.

THE WHEAT JOINT-WORM.

Isosoma tritici Riley.

EXHIBIT: Adult, work, and figure.

THE HAIRY-FACED JOINT-WORM.

Isosoma hirtifrons How.

EXHIBIT: Adult and figure.

THE HESSIAN FLY.

Mayetiola destructor Say.

(Formerly *Cecidomyia*.)

For general article with bibliography see Osborn, Bul. 16, n. s., Div. Ent., U. S. Dept. Agric., 57 pp., 1898; Marlatt, Farmers' Bul. 132, U. S. Dept. Agric., pp. 13–22, 1901.

EXHIBIT: Puparia, adult, work, figures, and map.

THE GREATER WHEAT-STEM MAGGOT.

Meromyza americana Fitch.

For general article see Webster, Bul. 42, Div. Ent., U. S. Dept. Agric., pp. 43–51, 1903.

EXHIBIT: Adult, work, and figure.

THE AMERICAN FRIT-FLY.

Oscinis soror Macq.

For general article see Webster, Bul. 42, Div. Ent., U. S. Dept. Agric., pp. 57–62, 1903.

EXHIBIT: Adult, work, and figure.

THE LESSER WHEAT-STRAW MAGGOT.

Oscinis carbonaria Loew.

For general article see Webster, Bul. 42, Div. Ent., U. S. Dept. Agric., pp. 51–56, 1903.

EXHIBIT: Adult.

CHLOROPS PROXIMA Say.

For short account see Comstock, Rpt. U. S. Comm. Agric., 1879, pp. 257–258, 1880.

EXHIBIT: Adult and work.

INSECTS INJURIOUS TO HOPS.

THE HOP APHIS.

Phorodon humuli Schr.

(Attacks hop and plum.)

For full life history see Riley, Cir. 2, Div. Ent., U. S. Dept. Agric., 1891.

EXHIBIT: Adult, work, and figures, with two enemies: *Chrysopa* sp. and *Adalia bipunctata* Linn.

THE COMMA BUTTERFLY.

Polygonia comma Harr.

(Formerly *Grapta.*)

For general account see Howard, Bul. 7, n. s., Div. Ent., U. S. Dept. Agric., pp. 50–51, 1897.

EXHIBIT: Larva and adult.

THE SEMICOLON BUTTERFLY.

Polygonia interrogationis Fab.

For general account see Howard, Bul. 7, n. s., Div. Ent., U. S. Dept. Agric., pp. 47–49, 1897.

EXHIBIT: Larva and adult.

THE HOP GRUB.

Gortyna immanis Guen.

For general account and life history see Howard, Bul. 7, n. s., Div. Ent., U. S. Dept. Agric., pp. 40–44, 1897.

EXHIBIT: Pupa, adult, and work.

THE HOP SNOUT-MOTH.

Hypena humuli Harr.

For general account see Howard, Bul. 7, n. s., Div. Ent., U. S. Dept. Agric., pp. 44–47, 1897.

EXHIBIT: Larva, pupa, and adult.

THE VARIEGATED CUTWORM.

Peridroma saucia Hbn.

For general bibliography and life history see Chittenden, Bul. 29, n. s., Div. Ent., U. S. Dept. Agric., pp. 46–64, 1901.

EXHIBIT: Larva and adult.

THE MEXICAN COTTON BOLL WEEVIL.

MEXICAN COTTON BOLL WEEVIL.

Anthonomus grandis Boh.

(Breeds in and destroys bolls.)

For full life history and general account see Hunter and Hinds, Bul. 51, Bur. Ent., U. S. Dept. Agric., 1905; also Hunter, Farmers' Bul. 216, U. S. Dept. Agric., 1905.

EXHIBIT: Life history (larvæ, pupæ, adults, injured cotton bolls, with stages present in bolls, and uninjured bolls); illustrations and map showing distribution in United States.

THE COTTON BOLLWORM; CORN-EAR WORM.

COTTON BOLLWORM; CORN-EAR WORM.

Heliothis obsoleta Fab.

(Formerly *H. armiger*. *H. obscura* by error. Larvæ feed on bolls of cotton, ears of corn, tobacco buds, beans, and in tomatoes; also cut off young plants of various garden crops.)

For full life history and general account see Quaintance and Brues, Bul. 50, Bur. Ent., U. S. Dept. Agric., 1905; also Quaintance and Bishopp, Farmers' Bul. 212, U. S. Dept. Agric., 1905.

EXHIBIT: Larva, pupa, adult, work in cotton bolls, and illustrations of different stages, and work on various plants. Parasite exhibited: *Archytas piliventris* v. d. W.; adult, pupa, and figure. Enemies exhibited: *Calosoma lugubre* Lec., *C. sayi* Dej., *C. scrutator* Fab., *Polistes annularis* Linn., and *P. rubiginosus* Lep.

INSECTS INJURIOUS TO SUGAR BEET.

For general articles see Forbes and Hart, Bul. 60, Ill. Agr. Expt. Sta., 136 pp., 1900; Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., 71 pp., 1903.

RED-LEGGED LOCUST.

Melanoplus femur-rubrum DeG.

For bibliography and general account see Scudder, Proc. U. S. N. M., Vol. XX, pp. 278–285, pl. 1, fig. h. pl. 19, figs. 1–4, 1897; Riley, Bul. 25, Div. Ent., U. S. Dept. Agric., pp. 27–28, 1891.
EXHIBIT: Adult and figure.

THE DIFFERENTIAL LOCUST.

Melanoplus differentialis Thos.

For bibliography and general account see Scudder, Proc. U. S. N. M., Vol. XX, pp. 349–354, pl. 23, figs. 3 and 4, 1897; also Morgan, Bul. 30, n. s., Div. Ent., U. S. Dept. Agric., pp. 7–26, 1901.
EXHIBIT: Adult and figure.

THE ROCKY-MOUNTAIN LOCUST.

Melanoplus spretus Thos.

For bibliography and general account see Scudder, Proc. U. S. N. M., Vol. XX, pp. 184–190, pl. 12, fig. 8, 1897; Riley, Bul. 25, Div. Ent., U. S. Dept. Agric., pp. 9–26, 1891.
EXHIBIT: Adult.

THE TWO STRIPED LOCUST.

Melanoplus bivittatus Say.

For bibliography and general account see Scudder, Proc. U. S. N. M., Vol. XX, pp. 363–368, pl. 24, fig. 5, 1897.
EXHIBIT: Adult, nymph, and figure.

THE LESSER LOCUST.

Melanoplus atlanis Riley.

For bibliography and general account see Scudder, Proc. U. S. N. M., Vol. XX, pp. 178–183, pl. 12, fig. 7, 1897; Riley, Bul. 25, Div. Ent., U. S. Dept. Agric., pp. 26–27 1891.
EXHIBIT: Adult.

THE CAROLINA LOCUST.

Dissosteira carolina Linn.

For short account see Forbes and Hart, Bul. 60, Ill. Agr. Expt. Sta., pp. 479–480, 1900.
EXHIBIT: Nymph, adult, and parasite *Frontina frenchii* Will.

THE BEET LEAF-MINER.

Pegomya vicina, Lint.

EXHIBIT: Adult and figure.

THE BEET CHLOROPS.

Chlorops assimilis Macq.

EXHIBIT: Puparium and adult.

THE COMMON ARMY WORM.

Heliophila unipuncta Harr.

(Formerly *Leucania*.)
For bibliography and life history see Lintner, 12th Rept. St. Ent. N. Y., pp. 190–214, 1896.
EXHIBIT: Larva and adult.

THE VARIEGATED CUTWORM.

Peridroma saucia Hübn.

For general bibliography and life history see Chittenden, Bul. 29, n. s., Div. Ent., U. S. Dept. Agric., pp. 46–64, 1902.
EXHIBIT: Larva, adult, and figure.

THE PURSLANE CATERPILLAR.

Copidryas gloveri G. & R.

EXHIBIT: Larva and adult.

FALL ARMY WORM.

Laphygma frugiperda S. & A.

For full bibliography and life history see Chittenden, Bul. 29, n. s., Div. Ent., U. S. Dept. Agric., pp. 40–45, 1901.
EXHIBIT: Larva, adult, and figure.

THE WHITE-LINED SPHINX.

Deilephila lineata Fab.

EXHIBIT: Adult and figure.

THE BEET ARMY WORM.

Caradrina exigua Hbn.

For general articles see Gillette, 12th Rpt. Colo. Agr. Expt. Sta., p. 39, 1900; Chittenden, Bul. 33, n. s., Div. Ent., U. S. Dept. Agric., pp. 37–46, 1902.
EXHIBIT: Adult and figure.

THE ZEBRA CATERPILLAR.

Mamestra picta Harr.

For bibliography and general life history see Felt, 14th Rpt. N. Y. St. Ent., pp. 201–207, 1898.
EXHIBIT: Larva and adult.

GARDEN WEBWORM.

Loxostege similalis Guen.

For general account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 39–40, 1903.
EXHIBIT: Cocoon, adult, and figure.

THE SUGAR-BEET WEBWORM.

Loxostege sticticalis Linn.

For general account see Forbes, Bul. 60, Ill. Agr. Expt. Sta., p. 457–459, 1900.
EXHIBIT: Cocoon, pupa, adult, and figure.

THE ISABELLA TIGER MOTH.

Isia isabella S. & A.

(Formerly *Pyrrharctia.*)
For general account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 44–45, 1903.
EXHIBIT: Larva, adult, and figure.

THE CLOVER CUTWORM.

Mamestra trifolii Rott.

For account see Riley, Rpt. U. S. Dept. Agric., 1883, pp. 123–124, 1883.
EXHIBIT: Larva, adult, and parasites *Ophion purgatum* Say and *Euphorocera claripennis* Macq.

THE CABBAGE LOOPER.

Autographa brassicæ Riley.

For general account and life history see Chittenden, Bul. 33, n. s., Div. Ent., U. S. Dept. Agric., pp. 60–69, 1902.
EXHIBIT: Larva, adult, and parasite *Limneria tibiator* Cr.

THE GARDEN FLEA-HOPPER.

Halticus uhleri Giard.

For general account see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 57–62, 1899.
EXHIBIT: Adult and figure.

THE TARNISHED PLANT-BUG.

Lygus pratensis Linn.

For general account see Riley, Rpt. U. S. Dept. Agric. f. 1884, pp. 312–315, 1885.
EXHIBIT: Adult and figure.

THE SANDY GROUND BUG.

Emblethis arenarius Linn.

EXHIBIT: Adult.

PURSLANE BUG.

Geocoris bullatus Say.

EXHIBIT: Adult.

THE MILITARY BUG.

Hadronema militaris Uhl.

EXHIBIT: Adult.

CLOUDED PIGWEED BUG.

Sphragisticus nebulosus Fall.

EXHIBIT: Adult.

THE BROWN LEAF-HOPPER.

Agallia sanguinolenta Prov.

EXHIBIT: Adult.

THE CHINCH-BUG.

Blissus leucopterus Say.

For general article and life history see Webster, Bul. 15, n. s., Div. Ent., U. S. Dept. Agric., 82 pp. 1898.
EXHIBIT: Eggs, nymph, adult, and figure.

THE FALSE CHINCH-BUG.

Nysius angustatus Uhl.

(Attacks many garden crops.)
EXHIBIT: Adult and figure.

HOODED PLANT-BUG.

Euthoctha galeator Fab.

EXHIBIT: Eggs, nymph, and adult.

THE IMBRICATED SNOUT-BEETLE.

Epicærus imbricatus Say.

For detailed account see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 62–67, 1899.
EXHIBIT: Adult and figure.

THE GIBBOUS JUNE BEETLE.

Lachnosterna gibbosa Burm.

For general account of white grubs see Forbes, 18th Rpt. St. Ent. Ill., pp. 109–144, 1894.

EXHIBIT: Adult and figure.

THE 12-SPOTTED CUCUMBER BEETLE.

Diabrotica duodecimpunctata Ol.

For general account and remedies see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 12–13, 1903; Quaintance, Bul. 26, n. s., pp. 35–40, 1900.

EXHIBIT: Adult, figures, and parasite *Celatoria diabroticæ*.

MONOCREPIDIUS VESPERTINUS Fab.

EXHIBIT: Adult and figure.

PENCILED SNOUT-BEETLE.

Centrinus penicellus Hbst.

EXHIBIT: Adult.

THE GREATER SUGAR-BEET LEAF-BEETLE.

Monoxia puncticollis Say.

EXHIBIT: Adult and figure.

THE LESSER SUGAR-BEET LEAF-BEETLE.

Monoxia consputa Lec.

EXHIBIT: Adult and figure.

THE GRAPE-VINE COLASPIS.

Colaspis brunnea Fab.

For general article see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 13–14, 1903.

EXHIBIT: Adult and figure.

WHITE GRUB; MAY BEETLE.

Lachnosterna fusca Fröh.

For account of white grubs injuring corn see Forbes, 18th Rpt. St. Ent. Ill., pp. 109–145, 1894.

EXHIBIT: Adult and figure.

THE CONVEX FLEA-BEETLE.

Psylliodes convexior Lec.

EXHIBIT: Adult.

THE PALE-STRIPED FLEA-BEETLE.

Systena blanda Mels.

For general articles see Chittenden, Bul. 23, n. s., Div. Ent., U. S. Dept. Agric., pp. 22–29, 1900; Bul. 43, Div. Ent., p. 16, 1903.

EXHIBIT: Adult and figure.

THE SPINACH FLEA-BEETLE.

Disonycha xanthomelæna Dalm.

EXHIBIT: Adult, figure, and parasite *Hypostena barbata* Coq.

THE WAVY-NECKED FLEA-BEETLE.

Disonycha crenicollis Say.

EXHIBIT: Adult.

THE TRIANGULAR FLEA-BEETLE.

Disonycha triangularis Say.

EXHIBIT: Adult.

THE CUCUMBER FLEA-BEETLE.

Epitrix cucumeris Harr.

For short account see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 89–90, 1899.
EXHIBIT: Adult and figure.

THE TOOTHED FLEA-BEETLE.

Chætocnema denticulata Illig.

EXHIBIT: Adult.

THE ASH-GRAY BLISTER BEETLE.

Macrobasis unicolor Kby.

For short article see Chittenden, Yearbook, U. S. Dept. Agric. f. 1898, pp. 249–250, 1899.
EXHIBIT: Adult.

THE SPOTTED BLISTER BEETLE.

Epicauta maculata Say.

For general account see Saunders, Bul. 57, S. Dak. Agric. Expt. Sta., p. 52, 1898; Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 24–25, 1903.
EXHIBIT: Adult and figure.

THE GRAY BLISTER BEETLE.

Epicauta cinerea Först.

For brief account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., p. 25, 1903.
EXHIBIT: Adult and figure.

BLACK BLISTER BEETLE.

Epicauta pennsylvanica DeG.

For brief account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., p. 25, 1903.
EXHIBIT: Adult and figure.

THE STRIPED BLISTER BEETLE.

Epicauta vittata Fab.

For general account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 22–23, 1903.
EXHIBIT: Adult and figure.

NUTTALL'S BLISTER BEETLE.

Cantharis nuttalli Say.

For short article see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., p. 27, 1903.
EXHIBIT: Adult and figure.

INSECTS INJURIOUS TO BEANS AND PEAS.

THE LIMA-BEAN STEM-BORER.

Monoptilota nubilella Hulst.

(Bores in stalks of Lima beans.)
For life history and general account see Chittenden, Bul. 23, n. s., Div. Ent., U. S. Dept. Agric., pp. 9–17, 1900.
EXHIBIT: Larva, cocoon, adult, work, and figure.

SMALLER CORN STALK-BORER.

Elasmopalpus lignosellus Zell.

For life history and general account see Chittenden, Bul. 23, n. s., Div. Ent., U. S. Dept. Agric., pp. 17–22, 1900.
EXHIBIT: Larva, adult, and figure.

NUTTALL'S BLISTER BEETLE.

Cantharis nuttalli Say.

For short article see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., p. 27, 1903.
EXHIBIT: Adult and figure.

THE ASH-GRAY BLISTER BEETLE.

Macrobasis unicolor Kby.

For short article see Chittenden, Yearbook, U. S. Dept. Agric. f. 1898, pp. 249–250, 1899.
EXHIBIT: Adult.

THE BEAN LEAF-BEETLE.

Cerotoma trifurcata Först.

(Formerly *C. caminea* Fab.)
For general account see Chittenden, Yearbook, U. S. Dept. Agric. f. 1898, pp. 253–254, 1899.
EXHIBIT: Adult and figure.

THE BEAN LADYBIRD.

Epilachna corrupta Muls.

For general account see Gillette, Bul. 47, Colorado Agr. Expt. Sta., pp. 41–43, 1898; Chittenden, Yearbook, U. S. Dept. Agric., f. 1898, pp. 251–253, 1899.
EXHIBIT: Adult and figure.

THE 12-SPOTTED CUCUMBER BEETLE.

Diabrotica duodecimpunctata Ol.

For general accounts and remedies see Quaintance, Bul. 26, n. s., Div. Ent., U. S. Dept. Agric., pp. 35–40, 1900; Chittenden, Bul. 43, pp. 12–13, 1903.
EXHIBIT: Adult.

THE IMBRICATED SNOUT-BEETLE.

Epicærus imbricatus Say.

For detailed account see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 62–67, 1899; for general account, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 28–29, 1903.
EXHIBIT: Adult.

THE BANDED FLEA-BEETLE.

Systena tæniata Say.

For short account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., p. 17, 1903.
EXHIBIT: Adult.

THE PALE-STRIPED FLEA-BEETLE.

Systena blanda Mels.

For general article see Chittenden, Bul. 23, n. s., Div. Ent., U. S. Dept. Agric., pp. 22–29, 1900; Bul. 43, p. 16, 1903.
EXHIBIT: Adult and figure.

THE LEAF-MINING LOCUST BEETLE.

Odontota dorsalis Thunb.

(Lives on locust, but attacks beans and other leguminous plants.)
For full life history, bibliography, and distribution see Chittenden, Bul. 38, Div. Ent., U. S. Dept. Agric., pp. 70–73, 1902.
EXHIBIT: Adult and figure.

THE DISTENDED MAY BEETLE.

Lachnosterna farcta Lec.

For short notices see Comstock, Rpt. U. S. Dept. Agric. f. 1879, pp. 247–248, Pl. V, fig. 5, 1880; Howard, Bul. 22, n. s., Div. Ent., U. S. Dept. Agric., p. 107, 1900.
EXHIBIT: Adult.

THE GARDEN FLEA-HOPPER.

Halticus uhleri Giard.

For general account see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 57–62, 1899.
EXHIBIT: Adult and figure.

THE DINGY CUTWORM.

Feltia subgothica Haw.

For brief account see Chittenden, Yearbook, U. S. Dept. Agric. f. 1898, p. 257, 1899.
EXHIBIT: Adult.

SALT-MARSH CATERPILLAR.

Estigmene acræa Dru.

(Formerly *Leucarctia.*)
For short account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 43–44, fig. 41, 1903.
EXHIBIT: Adult.

YELLOW-BEAR CATERPILLAR.

Diacrisia virginica Fab.

(Formerly *Spilosoma.*)
For general account see Lugger, 4th Rpt. State Ent. Minn., pp. 79–81, fig. 78, 1899.
EXHIBIT: Adult and figure.

THE BEAN CUTWORM.

Ogdoconta cinereola Guen.

(Feeds on buds and leaves.)
For life history and general account see Chittenden, Bul. 33, n. s., Div. Ent., U. S. Dept. Agric., pp. 98–100, 1902.
EXHIBIT: Adult and figure.

THE ROLLER WORM.

Eudamus proteus Linn.

(Feeds on buds and leaves.)
For general article and life history see Chittenden, Bul. 33, n. s., Div. Ent., U. S. Dept. Agric., pp. 92–96, 1902.
EXHIBIT: Larva, chrysalis, adult, and figure.

COMMON BEAN WEEVIL.

Bruchus obtectus Say.

For general account and life history see Chittenden, Yearbook, U. S. Dept. Agric. f. 1898, pp. 239–242, 1899.
EXHIBIT: Adult, work, and figure.

THE PEA WEEVIL.

Bruchus pisorum Linn.

For general account and life history see Chittenden, Yearbook, U. S. Dept. Agric. f. 1898, pp. 234–239, 1899.
EXHIBIT: Adult, work, and figure.

25916—No. 53—05——4

THE COWPEA WEEVIL.

Bruchus chinensis Linn.

For general account and life history see Chittenden, Yearbook, U. S. Dept. Agric. f. 1898, pp. 242–245, 1899.
EXHIBIT: Adult and figure.

FOUR-SPOTTED BEAN-WEEVIL.

Bruchus quadrimaculatus Boh.

For general account and life history see Chittenden, Yearbook, U. S. Dept. Agric. f. 1898, pp. 245–247, 1899.
EXHIBIT: Adult and figure.

THE LENTIL WEEVIL.

Bruchus lentis Boh.

For brief account see Chittenden, Yearbook, U. S. Dept. Agric. f. 1898, p. 248, 1899.
EXHIBIT: Adult.

EUROPEAN BEAN-WEEVIL.

Bruchus rufimanus Boh.

For general account see Chittenden, Yearbook, U. S. Dept. Agric. f. 1898, pp. 247–248, 1899.
EXHIBIT: Adult.

THE MEXICAN BEAN-WEEVIL.

Spermophagus pectoralis Shp.

For brief account see Chittenden, Yearbook, U. S. Dept. Agric. f. 1898, p. 248,1899.
EXHIBIT: Adult and figure.

THE GRAY HAIR-STREAK.

Uranotes melinus Hbn.

(Works in pods of peas and beans, and in silk corn. Formerly *Thecla.*)
For brief article see Chittenden, Bul. 33. n. s., Div. Ent., U. S. Dept. Agric., pp. 101–102, 1902.
EXHIBIT: Larva, pupa, adult, and figure.

BOLLWORM; CORN-EAR WORM.

Heliothis obsoleta Fab.

(See special case for full life history with illustrations.)
For life history and general account see Quaintance and Brues, Bul. 50, Bur. Ent., U. S. Dept. Agric., 1905; also Quaintance and Bishopp, Farmers' Bul. 212, U. S. Dept. Agric., 1905.
EXHIBIT: Larva, adult, work, and figure.

THE IMPORTED PEA-MOTH.

Semasia nigricana Steph.

For general accounts and life history see Fletcher, Rpt. Ent. and Bot., Can. Dept. Agric., 1900, p. 214, 1901; Chittenden, Bul. 33, n. s., Div. Ent., U. S. Dept. Agric., pp. 96–98, 1902.
EXHIBIT: Adult and figure.

INSECTS INJURIOUS TO CRUCIFERS.

IMPORTED CABBAGE-WORM.

Pontia rapæ Sch.

(Formerly *Pieris.*)
For general articles see Riley, Rpt. U. S. Dept. Agric. f. 1883, pp. 108–113, 1884; Lugger, 1st Rpt. St. Ent. Minn., pp. 71–77, Pl. VI, 1896; Chittenden, Cir. 60, Bur Ent., U. S. Dept. Agric., 1905.
EXHIBIT: Larva, chrysalis, and adult.

THE LARGE CABBAGE BUTTERFLY.

Pontia monuste Linn.

(Formerly *Pieris.*)
For general article see Riley, Rpt. U. S. Dept. Agric. f. 1883, pp. 117–118, 1884.
EXHIBIT: Adult.

THE POT-HERB BUTTERFLY.

Pontia oleracea Boisd.

(Formerly *Pieris.*)
For general account see Riley, Rpt. U. S. Dept. Agric. f. 1883, pp. 115–117, 1884.
EXHIBIT: Chrysalis and adult.

THE SOUTHERN CABBAGE WORM.

Pontia protodice Boisd.

(Formerly *Pieris.*)
For general articles see Riley, Rpt. U. S. Dept. Agric. f. 1883, pp. 114–115, 1884 Lugger, 1st Rpt. St. Ent. Minn., pp. 71–77, Pl. VII, 1896.
EXHIBIT: Chrysalis and adult.

GARDEN WEBWORM.

Loxostege similalis Guen.

For general account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 39–40, 1903.
EXHIBIT: Adult and figure.

GRANULATED CUTWORM.

Feltia annexa Tr.

For description of eggs and larval stage see French, Can. Ent., Vol. XIV, pp. 207–210, 1882. For general account see Riley, Rpt. U. S. Dept. Agric., 1884, pp. 291–292, 1885.
EXHIBIT: Larva, pupa, adult, and figure.

THE STRIPED CUTWORM.

Feltia subgothica Haw.

For general account see Slingerland, Bul. 104, Cornell Univ. Agric. Expt. Sta., pp. 274–279, 1895.
EXHIBIT: Larva, adult, and figure.

SHAGREENED CUTWORM.

Feltia malefida Guen.

(Larvæ destroy young plants.)
For short account see Riley, Rpt. U. S. Dept. Agric., 1884, pp. 292–293, 1885.
EXHIBIT: Adult and figure.

THE VARIEGATED CUTWORM.

Peridroma saucia Hbn.

For general bibliography and life history see Chittenden, Bul. 29, n. s., Div. Ent., U. S. Dept. Agric., pp., 46–64, 1902.
EXHIBIT: Larva, adult, and figure.

THE BLACK CUTWORM.

Agrotis ypsilon Rott.

For general account see Riley, Rpt. U. S. Dept. Agric. f. 1884, pp. 294–295, 1885.
EXHIBIT: Larva, adult, and figure.

THE SPECKLED CUTWORM.

Mamestra subjuncta G. & R.

For general account see Riley, Rpt. U. S. Dept. Agric. f. 1884, p. 296, 1885.
EXHIBIT: Larva, pupa, and adult.

THE GLASSY CUTWORM.

Hadena devastatrix Brace.

For general account see Riley, Rpt. U. S. Dept. Agric. f. 1884, pp. 296–297, 1885.
EXHIBIT: Adult.

THE W-MARKED CUTWORM.

Noctua clandestina Harr.

For general account see Slingerland, Bul. 104, Cornell Univ. Agr. Expt. Sta., pp. 571–574, 1895.
EXHIBIT: Larva and adult.

FALL ARMY WORM.

Laphygma frugiperda S. & A.

For full bibliography and life history see Chittenden, Bul. 29, n. s., Div. Ent., U. S. Dept. Agric., pp. 40–45, 1901.
EXHIBIT: Larva, adult, and figure.

THE CROSS-STRIPED CABBAGE WORM.

Evergestis rimosalis Guen.

(Formerly *Pionea.*)
For general article see Chittenden, Bul. 33, n. s., Div. Ent., U. S. Dept. Agric., pp. 54–59, 1902.
EXHIBIT: Larva, pupa, cocoon, adult, and figure.

THE SALT-MARSH CATERPILLAR.

Estigmene acræa Dru.

(Formerly *Leucarctia.*)
For general account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 43–44, 1903.
EXHIBIT: Larva, cocoon, and adult.

THE CABBAGE LOOPER.

Autographa brassicæ Riley.

(Formerly *Plusia.*)
For general account and life history see Chittenden, Bul. 33, n. s., Div. Ent., U. S. Dept. Agric., pp. 60–69, 1902.
EXHIBIT: Larva, cocoon, pupa, and adult.

THE DIAMOND-BACK MOTH.

Plutella maculipennis Curtis.

(Formerly *P. cruciferarum.*)
For general account see Lugger, 1st Rpt. St. Ent. Minn., p. 79, Pl. VI, 1896.
EXHIBIT: Larva, cocoon, adult, and work.

HARLEQUIN CABBAGE BUG.

Murgantia histrionica Hahn.

(Feeds on cruciferous plants of all kinds.)
For general accounts see Riley, Rept. U. S. Dept. Agric. f. 1884, pp. 309–312, 1885; Smith, Bul. 121, N. J. Agr. Expt. Sta., pp. 3–6, 1897.
EXHIBIT: Eggs, nymph, and adult.

THE TARNISHED PLANT-BUG.

Lygus pratensis Linn.

For general account see Riley, Rpt. U. S. Dept. Agric. f. 1884, pp. 312–315, 1885.
EXHIBIT: Adult.

THE EGG-PLANT FLEA-BEETLE.

Epitrix fuscula Cr.

For general account see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 87–89, 1899.
EXHIBIT: Adult and figure.

THE RED TURNIP BEETLE.

Entomoscelis adonidis Pallas.

For partial life history, short accounts, and bibliography see Fletcher, Rpt. Ent. and Bot., Can. Dept. Agr., 1892, pp. 152–155, 1893; loc. cit., 1900, pp. 241, 1901; Chittenden, Bul. 33, n. s., Div. Ent., U. S. Dept. Agric., pp. 49–53, 1902.
EXHIBIT: Figure.

WESTERN CABBAGE FLEA-BEETLE.

Phyllotreta albionica Lec.

EXHIBIT: Adult.

HORSE-RADISH FLEA-BEETLE.

Phyllotreta armoraciæ Koch.

For general accounts see Chittenden, Ins. Life, Vol. VII, pp. 404–406, 1895; Bul. 9, n. s., Div. Ent., U. S. Dept. Agric., pp. 21–22, 1897.
EXHIBIT: Adult.

THE WESTERN FLEA-BEETLE.

Phyllotreta pusilla Horn.

For general account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 18–19, 1903.
EXHIBIT: Adult and figure.

THE STRIPED FLEA-BEETLE.

Phyllotreta vittata Fab.

For general account see Riley, Rpt. U. S. Dept. Agric. f. 1884, pp. 301–304, 1885.
EXHIBIT: Adult.

WAVY-STRIPED FLEA-BEETLE.

Phyllotreta sinuata Steph.

(Formerly *P. zimmermani.*)
For general account see Riley, Rpt. U. S. Dept. Agric. f. 1884, pp. 304–308, 1885.
EXHIBIT: Adult.

THE CAULIFLOWER PYRALID.

Pachyzancla bipunctalis Fab.

(Formerly *Botis repetitalis.*)
For description and brief accounts see Comstock, Rpt. U. S. Dept. Agric. f. 1880, p. 270, 1881; Riley, Rpt. U. S. Dept. Agric. f. 1883, pp. 128–129, 1884.
EXHIBIT: Pupa and adult.

THE ZEBRA CATERPILLAR.

Mamestra picta Harr.

For bibliography and general life history see Felt, 14th Rpt. N. Y. St. Ent., pp. 201–207, 1898.
EXHIBIT: Larva, pupa, and adult.

THE CABBAGE MAGGOT.

Pegomya brassicæ Bouché.

(Formerly *Anthomyia.*)
For general account see Riley, Rpt. U. S. Dept. Agric. f. 1884, pp. 319–321, 1885.
EXHIBIT: Adult.

THE CABBAGE APHIS.

Aphis brassicæ Linn.

For general account see Riley, Rpt. U. S. Dept. Agric. f. 1884, pp. 317–319, 1885.
EXHIBIT: Adult and work.

IMPORTED CABBAGE WEBWORM.

Hellula undalis Fab.

For general account see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 51–57, 1899.
EXHIBIT: Larva, pupa, adult, and figure.

THE CABBAGE CURCULIO.

Ceutorhynchus rapæ Gyll.

For general account and partial life history see Chittenden, Bul. 23, n. s., Div. Ent., U. S. Dept. Agric., pp. 39–50, 1900.
EXHIBIT: Adult and figure.

THE IMPORTED CABBAGE LEAF-MINER.

Scaptomyza graminum Fall.

(Formerly *Oscinis brassicæ.*)
See Riley, Rpt. U. S. Dept. Agric. f. 1884, p. 322, 1885. For short account see Chittenden, Bul. 33, n. s., Div. Ent., U. S. Dept. Agric., pp. 76–77, 1902.
EXHIBIT: Adult.

INSECTS INJURIOUS TO POTATO.

THE RINGED MILLIPEDE.

Cambala annulata Say.

EXHIBIT: Figure.

THE SHORT-WINGED MOLE-CRICKET.

Scapteriscus abbreviatus Scudd.

For general account see Chittenden, Bul. 40, Div. Ent., U. S. Dept. Agric., pp. 117–118, 1903. For account of an allied species, *S. didactylus* Latr., see Barrett, Bul. 2, Porto Rico Agric. Expt. Sta., 1902.
EXHIBIT: Adult.

POTATO-TUBER WORM; TOBACCO SPLIT-WORM.

Phthorimæa operculella Zell.

(Formerly *Lita* and *Gelechia solanella.* Works in stems and tubers.)
For general account see Riley and Howard, Insect Life, Vol. IV, pp. 239–242, 1892; Howard, Farmers' Bul. 120, U. S. Dept. Agric., pp. 19–22, 1900.
EXHIBIT: Adult and figure.

THE POTATO-STALK WEEVIL.

Trichobaris trinotata Say.

For life history and general account see Chittenden, Bul. 33, n. s., Div. Ent., U. S. Dept. Agric., pp. 9–19, 1902.
EXHIBIT: Adult and work.

STALK BORER.

Papaipema nitela Guen.

(Formerly *Gortyna* and *Hydræcia.* Bores in stems of various plants.)
For general account see Bird, Can. Ent., Vol. XXX, pp. 127–128, 1898.
EXHIBIT: Adult.

THE LITTLE GREEN TORTOISE BEETLE.

Cassida pallidula Boh.

(Formerly *C. texana.*)
For short account see Riley, Amer. Nat., vol. 17, p. 1070, October [17 Sept.], 1883.
EXHIBIT: Adult.

THE GOLDEN TORTOISE BEETLE.

Coptocycla bicolor Fab.

(Formerly *C. aurichalcea.*)
For general account see Sanderson, Bul. 59, Md. Agr. Expt. Sta., pp. 139–140, 1899.
EXHIBIT: Adult.

COLORADO POTATO BEETLE.

Leptinotarsa decemlineata Say.

(Formerly *Doryphora.*)
For general account of life history see Smith, Rpt. N. J. Agric. Expt. Sta. f. 1895, pp. 452–458, 1896.
EXHIBIT: Egg, larva, pupa, adult, figure, and the following enemies: *Brachinus kansanus* Lec., *Chilocorus bivulnerus* Mels., *Coccinella sanguinea* Linn., *Coccinella novemnotata* Hbst., *Harpalus caliginosus* Fab., *Hippodamia convergens* Güer., *Hippodamia glacialis* Fab., *Lebia atriventris* Say, *Lebia grandis* Htz., *Megilla maculata* DeG., *Nezara hilaris* Say, *Pasimachus elongatus* Lec., *Podisus spinosus* Dall., *Polistes pallipes* Lep., and *Tetracha virginica* Linn.

BOGUS POTATO BEETLE.

Leptinotarsa juncta Germ.

(This species exhibited merely on account of similarity to preceding species. It feeds on wild Solanum [*Solanum* spp.]).
EXHIBIT: Adult.

THREE-LINED POTATO BEETLE.

Lema trilineata Ol.

For general account see Riley, 1st Rpt. St. Ent. Mo., pp. 99–100, 1869.
EXHIBIT: Adult and figure.

THE WHITE BLISTER BEETLE.

Macrobasis albida Say.

For brief account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., p. 26, 1903.
EXHIBIT: Adult.

THE ASH-GRAY BLISTER BEETLE.

Macrobasis unicolor Kby.

For general account see Chittenden, Yearbook, U. S. Dept. Agric. f. 1898, pp. 249–250, 1899.
EXHIBIT: Adult.

THE STRIPED BLISTER BEETLE.

Epicauta vittata Fab.

For general account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 22–23, 1903.
EXHIBIT: Adult.

BLACK BLISTER BEETLE.

Epicauta pennsylvanica DeG.

For brief account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric. p. 25, 1903.
EXHIBIT: Adult.

THE CROW BLISTER BEETLE.

Epicauta corvina Lec.

For brief notice see Comstock, Rpt. U. S. Comm. Agric. f. 1879, p. 251, 1880.
EXHIBIT: Adult.

THE GRAY BLISTER BEETLE.

Epicauta cinerea Först.

For brief account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., p. 24, 1903.
EXHIBIT: Adult.

THE SPOTTED BLISTER BEETLE.

Epicauta maculata Say.

For general accounts see Saunders, Bul. 57, S. Dak. Agric. Expt. Sta., p. 52, 1898; Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 24–25, 1903.
EXHIBIT: Adult and figure.

THE EGG-PLANT FLEA-BEETLE.

Epitrix fuscula Cr.

For general account see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 87–89, 1899.
EXHIBIT: Adult.

INSECTS INJURIOUS TO SWEET POTATOES.

For general bulletin see Sanderson, Sweet Potato Insects, Bul. 59, Md. Agri. Expt. Sta., 1900.

SWEET-POTATO ROOT-BORER.

Cylas formicarius Fab.

EXHIBIT: Adult and work.

SWEET-POTATO HAWK-MOTH.

Phlegethontius convolvuli Linn.

EXHIBIT: Adult.

THE SWEET-POTATO PLUME-MOTH.

Pterophorus monodactylus Linn.

EXHIBIT: Adult.

LARGER SWEET-POTATO SAWFLY.

Schizocerus privatus Nort.

For general account see Marlatt, Insect Life, Vol. V, pp. 24–27, fig. 6, 1892.
EXHIBIT: Adult and figure.

SWEET-POTATO FLEA-BEETLE.

Chætocnema confinis Cr.

EXHIBIT: Adult.

THE CUCUMBER FLEA-BEETLE.

Epitrix cucumeris Harr.

For short account see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 89–90, 1899.
EXHIBIT: Adult.

THE MOTTLED TORTOISE BEETLE.

Coptocycla signifera Hbst.

(Formerly *C. guttata.*)
EXHIBIT: Adult.

BLACK-LEGGED TORTOISE BEETLE.

Cassida nigripes Ol.

EXHIBIT: Adult and work.

TWO-STRIPED TORTOISE BEETLE.

Cassida bivittata Say.

EXHIBIT: Adult.

THE GREEN TORTOISE BEETLE.

Physonota unipunctata Say.

For brief notices see Hamilton, Can. Ent., Vol. XVI, pp. 134–135, 1884, and Caulfield, l. c., p. 227.
EXHIBIT: Adult.

THE ARGUS TORTOISE BEETLE.

Chelymorpha argus Licht.

(Also called *C. cassidea.*)
EXHIBIT: Adult.

INSECTS INJURIOUS TO TOMATO.

NORTHERN TOBACCO WORM; TOMATO WORM.

Phlegethontius quinquemaculata Haw.

(Formerly *Protoparce celeus.*)
For general account see Howard, Farmers' Bul. 120, U. S. Dept. Agric., pp. 10–14, 1900.
EXHIBIT: Larva and adult.

SOUTHERN TOBACCO WORM; HORNBLOWER.

Phlegethontius sexta Joh.

(Formerly *Protoparce carolina.*)
For general accounts see Howard, Farmers' Bul. 120, U. S. Dept. Agric., pp. 10–14, 1900; Alwood, Bul. 17, n. s., Div. Ent., U. S. Dept. Agric., pp. 72–74, 1898.
EXHIBIT: Larva and adult.

THE STALK BORER.

Papaipema nitela Guen.

For general accounts see Bird, Can. Ent., Vol. XXX, pp. 127–128, 1898; Lugger, 4th Rpt. State Ent. Minn., pp. 167–168, 1899.
EXHIBIT: Pupa and adult.

THE COMMELINA OWLET-MOTH.

Prodenia commelinæ S. & A.

For life history and general account see Chittenden, Bull. 27, n. s., Div. Ent., U. S. Dept. Agric., pp. 59–64, Pl. IV, fig. 1, 1901.
EXHIBIT: Larva and adult.

CORN-EAR WORM; COTTON BOLLWORM.

Heliothis obsoleta Fab.

(Feeds also on tobacco and tomato; formerly *H. armiger* Hbn.)
For life history and general account see Quaintance and Brues, Bul. 50, Bur. Ent., U. S. Dept. Agric., 1905; also Quaintance and Bishopp, Farmers' Bul. 212, 1905.
EXHIBIT: Larva and adult.

INSECTS INJURIOUS TO ASPARAGUS.

For general article on asparagus insects see Chittenden, Bul. 10, n. s., pp. 54–62, 1898.

THE ASPARAGUS MINER.

Agromyza simplex Loew.

For general account see Sirrine, Bul. 189, N. Y. Agric. Exp. Sta., pp. 277–282, 1900.
EXHIBIT: Adult.

LOPIDEA MEDIA Say.

EXHIBIT: Adult.

THE LESSER LOCUST.

Melanoplus atlanis Riley.

For bibliography and general accounts see Scudder, Proc. U. S. N. M., Vol. XX, pp. 178–183; pl. 12, fig. 7, 1897; Riley, Bul. 25, Div. Ent., U. S. Dept. Agric., pp. 26–27, 1891.

EXHIBIT: Adult.

THE TWO-STRIPED LOCUST.

Melanoplus bivittatus Say.

For bibliography and general accounts see Scudder, Proc. U. S. N. M., Vol. XX, pp. 363–368, pl. 24, fig. 5, 1897; Riley, Bul. 25, Div. Ent., U. S. Dept. Agric., pp. 31–32, 1891.

EXHIBIT: Adult and figure.

RED-LEGGED LOCUST.

Melanoplus femur-rubrum DeG.

For bibliography and general accounts see Scudder, Proc. U. S. N. M., Vol. XX, pp. 278–285, pl. 1, fig. h; pl. 19, figs. 1–4, 1897; Riley, Bul. 25, Div. Ent., U. S. Dept. Agric., pp. 27–28, 1891.

EXHIBIT: Adult.

MELANOPLUS PROPINQUUS Scudd.

For original description see Scudder, Proc. U. S. N. M., Vol. XX, pp. 285–286, pl. 18, fig. 9, 1897.

EXHIBIT: Adult.

TWELVE-SPOTTED ASPARAGUS BEETLE.

Crioceris duodecimpunctata Linn.

For detailed account see Chittenden, Yearbook, U. S. Dept. Agric., 1896, pp. 349–352, 1897.

EXHIBIT: Adult, figure, and adult of enemy, *Podisus spinosus* Dall.

THE ASPARAGUS BEETLE.

Crioceris asparagi Linn.

For detailed account see Chittenden, Yearbook, U. S. Dept. Agric., 1896, pp. 341–349. For bibliography and general account see Lintner, 11th Rpt. St. Ent. N. Y., pp. 177–188, 1896.

EXHIBIT: Larva, adult, figure, and enemy *Stiretrus anchorago* Fab.

THE TWELVE-SPOTTED CUCUMBER BEETLE.

Diabrotica duodecimpunctata Ol.

For general accounts and remedies see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 12–13, 1903; Quaintance, Bul. 26, n. s., Div. Ent., U. S. Dept. Agric., pp. 35–40, 1900.

EXHIBIT: Adult and figure.

FALSE BUD-WORM; COTTON BOLLWORM.

Heliothis obsoleta Fab.

(Formerly *H. armiger* Hbn. For full life-history exhibit see under cotton and corn.)

For life history and general account see Quaintance and Brues, Bul. 50, Bur. Ent., U. S. Dept. Agric., 1905; also Quaintance and Bishopp, Farmers' Bul. 212, U. S. Dept. Agric., 1905.

EXHIBIT: Adult.

ZEBRA CATERPILLAR.

Mamestra picta Harr.

For general account see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 42–43, 1903.

EXHIBIT: Larva, adult, and figure.

THE PRETTY CUTWORM.

Mamestra legitima Grt.

For brief account see Howard, Farmers' Bul. 120, U. S. Dept. Agric., pp. 24–25, fig. 20, 1900.
EXHIBIT: Larva, adult, and figure.

CRANBERRY SPANWORM.

Cleora pampinaria Guen.

For general account see Smith, Farmers' Bul. 178, pp. 19–21, 1903.
EXHIBIT: Larva, pupa, and adult.

THE RED-BANDED LEAF-ROLLER.

Eulia triferana Walk.

(Formerly *Lophoderus.*)
For brief account see Lugger, 4th Rpt. State Entom. Minn., p. 231, 1899.
EXHIBIT: Larva, pupa, and adult.

THE SULPHUR-COLORED TORTRIX.

Epagoge sulfureana Clem.

(Formerly *Dichelia.*)
For brief account see Lugger, 4th Rpt. State Entom. Minn., pp. 232–233, 1899.
EXHIBIT: Pupa and adult.

INSECTS INJURIOUS TO CUCURBITS.

SQUASH-VINE BORER.

Melittia satyriniformis Hbn.

(Formerly *Ægeria cucurbitæ* and *M. ceto.*)
For life history and general accounts see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 34–40, 1899; Cir. 38, Div. Ent., U. S. Dept. Agric., 1899.
EXHIBIT: Larva, pupa, cocoon, adult, and figure.

PICKLE WORM.

Diaphania nitidalis Cram.

(Formerly *Eudioptis* and *Margaronia.*)
For general accounts and bibliography see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 40–42, 1899; Lintner, 11th Rpt. N. Y. St. Ent., pp. 126–133, 1896.
EXHIBIT: Pupa, cocoon, adult, and figure.

MELON CATERPILLAR.

Diaphania hyalinata Linn.

(Formerly *Eudioptis* and *Margaronia.*)
For general accounts and bibliography see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 42–44, 1899; Lintner, 11th Rpt. N. Y. St. Ent., pp. 134–138, 1896.
EXHIBIT: Larva, pupa, adult, and figure.

NORTHERN LEAF-FOOTED PLANT-BUG.

Leptoglossus oppositus Say.

For life history and general account see Chittenden, Bul. 33, n. s., Div. Ent., U. S. Dept. Agric., pp. 18–25, 1902.
EXHIBIT: Nymph, adult, and figure.

STRIPED CUCUMBER BEETLE.

Diabrotica vittata Fab.

For general accounts see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 48–51, 1899; Cir. 31, Div. Ent., U. S. Dept. Agric., 1898.
EHHIBIT: Adult, work, and figure.

TWELVE-SPOTTED CUCUMBER BEETLE.

Diabrotica duodecimpunctata Ol.

For general articles see Chittenden, Bul. 43, Div. Ent., U. S. Dept. Agric., pp. 12–13, 1903; Quaintance, Bul. 26, n. s., pp. 35–40, 1900.
EXHIBIT: Adult.

THE CUCUMBER FLEA-BEETLE.

Epitrix cucumeris Harr.

For short account see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 89–90, 1899.
EXHIBIT: Adult and figure.

THE PUNCTURED FLEA-BEETLE.

Psylliodes punctulata Mels.

For brief account see Forbes and Hart, 21st Rpt. St. Ent. Ill., p. 124, 1900.
EXHIBIT: Adult.

THE HORNED SQUASH-BUG.

Anasa armigera Say.

For general accounts see Chittenden, Can. Ent. Vol. XXX, pp. 239–240, 1898; Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 28–34, 1899.
EXHIBIT: Eggs, nymph, adult, and figure.

THE COMMON SQUASH-BUG.

Anasa tristis DeG.

For general accounts see Chittenden, Cir. 39, Div. Ent., U. S. Dept. Agric., 1899; Bul. 19, n. s., pp. 20–28, 1899.
EXHIBIT: Eggs, nymph, adult, and figure.

THE SQUASH LADYBIRD.

Epilachna borealis Fab.

For bibliography and life history see Chittenden, Bul. 19, n. s., Div. Ent., U. S. Dept. Agric., pp. 11–20, 1899.
EXHIBIT: Larva, pupa, adult, and work.

INSECTS INJURIOUS TO STORED PRODUCTS.

THE WOLF MOTH.

Tinea granella Linn.

For general account see Chittenden, Bul. 8, n. s., Div. Ent., U. S. Dept. Agric., pp. 31–34, 1897.
EXHIBIT: Pupa and adult.

MEDITERRANEAN FLOUR-MOTH.

Ephestia kuehniella Zell.

For general account see Chittenden, Farmers' Bul. 45, U. S. Dept. Agric., pp. 8–9, 1897.
EXHIBIT: Larva, pupa, cocoon, adult, and figure.

DRIED-CURRANT MOTH.

Ephestia cautella Wlk.

For short account (under *E. cahiritella*) see Chittenden, Bul. 8, n. s., Div. Ent., U. S. Dept. Agric., pp. 7–9, 1897.
EXHIBIT: Larva, adult, and figure.

THE MEAL SNOUT-MOTH.

Pyralis farinalis Linn.

(Formerly *Asopia.*)
For short account see Chittenden, Farmers' Bul. 45, U. S. Dept. Agric., pp. 10–11, 1897.
EXHIBIT: Larva, pupa, cocoon, and adult.

THE INDIAN-MEAL MOTH.

Plodia interpunctella Hbn.

(Formerly *Ephestia.*)
For general account see Chittenden, Farmers' Bul. 45, U. S. Dept. Agric., pp. 9–10 1897.
EXHIBIT: Larva, pupa, adult, work, and figure.

ANGOUMOIS GRAIN MOTH.

Sitotroga cerealella Ol.

(Formerly *Gelechia.*)
For general account see Chittenden, Farmers' Bul. 45, U. S. Dept. Agric., pp. 6–7, 1897.
EXHIBIT: Cocoon, adult, work, and figure.

THE FOREIGN GRAIN-BEETLE.

Cathartus advena Waltl.

For short account see Chittenden, Farmers' Bul. 45, U. S. Dept. Agric., pp. 17–18, 1897.
EXHIBIT: Adult, work, and figure.

RED OR SQUARE-NECKED GRAIN-BEETLE.

Cathartus gemellatus Duv.

For short account see Chittenden, Farmers' Bul. 45, U. S. Dept. Agric., p. 17, 1897.
EXHIBIT: Adult and figure.

THE SAW-TOOTHED GRAIN-BEETLE.

Silvanus surinamensis Linn.

For short account see Chittenden, Farmers' Bul. 45, U. S. Dept. Agric., pp. 16–17, 1897.
EXHIBIT: Adult and figure.

THE MERCHANT GRAIN-BEETLE.

Silvanus mercator Fauv.

For short account see Chittenden, Bul. 8, n. s., Div. Ent., U. S. Dept. Agric., p. 12, 1897.
EXHIBIT: Adult.

PHARAXONOTHA KIRSCHII Reitt.

For short notice see Chittenden, Insect Life, Vol. VII, p. 327, 1895.
EXHIBIT: Adult.

THE FLAT GRAIN-BEETLE.

Læmophlœus pusillus Sch.

For short account see Chittenden, Bul. 4, n. s., rev. ed., Div. Ent., U. S. Dept. Agric., p. 129, 1902.
EXHIBIT: Adult.

TYPHŒA FUMATA Linn.

EXHIBIT: Adult and work.

THE BLACK CARPET BEETLE.

Attagenus piceus Ol.

For general account see Chittenden, Bul. 8, n. s., Div. Ent., U. S. Dept. Agric., pp. 15–19, 1897.
EXHIBIT: Adult.

TROGODERMA TARSALE Mels.

For general account see Chittenden, Bul. 8, n. s., Div. Ent., U. S. Dept. Agric., pp. 19–21, 1897.
EXHIBIT: Adult.

THE CABINET BEETLE.

Anthrenus verbasci Linn.

(Formerly *A. varius.*)
For short account see Chittenden, Bul. 8, n. s., Div. Ent., U. S. Dept. Agric., pp 22–23, 1897.
EXHIBIT: Adult and work.

THE MEAL SAP-BEETLE.

Carpophilus dimidiatus Fab.

EXHIBIT: Adult.

THE CORN SAP-BEETLE.

Carpophilus pallipennis Say.

EXHIBIT: Adult.

THE CADELLE.

Tenebroides mauritanicus Linn.

(Formerly *Trogosita.*)
For general account see Chittenden, Farmers' Bul. 45, U. S. Dept. Agric., pp. 18–19, 1897.
EXHIBIT: Larva, adult, work, and figure.

THE DARK MEAL-WORM.

Tenebrio obscurus Fab.

For short account see Chittenden, Farmers' Bul. 45, rev. ed., U. S. Dept. Agric., p. 15, 1897.
EXHIBIT: Larva, pupa, adult, and figure.

THE YELLOW MEAL-WORM.

Tenebrio molitor Linn.

For general account see Chittenden, Farmers' Bul. 45, rev. ed., U. S. Dept. Agric., pp. 14–15, 1897.
EXHIBIT: Larva, pupa, adult, and figure.

THE WHITE-MARKED SPIDER BEETLE.

Ptinus fur Linn.

For general account see Chittenden, Bul. 4, n. s., rev. ed., Div. Ent., U. S. Dept. Agric., pp. 127–128, 1902.
EXHIBIT: Adult.

THE BROWN SPIDER BEETLE.

Ptinus brunneus Dufts.

For short account see Chittenden, Bul. 4, n. s., rev. ed., Div. Ent., U. S. Dept. Agric., p. 128, 1902.
EXHIBIT: Adult.

THE DRUG-STORE BEETLE.

Sitodrepa panicea Linn.

(Listed as *Anobium* in foreign catalogues.)
For general account see Chittenden, Bul. 4, n. s., rev. ed., Div. Ent., U. S. Dept. Agric., pp. 124–126, 1897.
EXHIBIT: Adult, work, and figure.

THE CIGARETTE BEETLE.

Lasioderma testaceum Dufts.

(Formerly *L. serricorne.*)
For general account see Chittenden, Bul. 4, n. s., rev. ed., Div. Ent., U. S. Dept. Agric., pp. 126–127, 1897.
EXHIBIT: Adult and figure.

THE LARGER GRAIN-BORER.

Dinoderus truncatus Horn.

For short account see Chittenden, Insect Life, Vol. VII, p. 327, 1895.
EXHIBIT: Adult.

THE RUST-RED FLOUR-BEETLE.

Tribolium ferrugineum Fab.

For general account see Chittenden, Farmers' Bul. 45, rev. ed., U. S. Dept. Agric., pp. 12–13, 1897.
EXHIBIT: Adult.

THE CONFUSED FLOUR-BEETLE.

Tribolium confusum Duv.

For general account see Chittenden, Bul. 4, n. s., rev. ed., Div. Ent., U. S. Dept. Agric., pp. 113–115, 1902.
EXHIBIT: Adult and figure.

THE SLENDER-HORNED FLOUR-BEETLE.

Echocerus maxillosus Fab.

For short account see Chittenden, Farmers' Bul. 45, rev. ed., U. S. Dept. Agric., p. 13, 1897.
EXHIBIT: Adult and figure.

THE BROAD-HORNED FLOUR-BEETLE.

Echocerus cornutus Fab.

For short account see Chittenden, Farmers' Bul. 45, rev. ed., U. S. Dept. Agric., p. 13, 1897.
EXHIBIT: Adult and figure.

THE SMALL-EYED FLOUR-BEETLE.

Palorus ratzeburgi Wissm.

For short account see Chittenden, Farmers' Bul. 45, rev. ed., U. S. Dept. Agric., pp. 13–14, 1897.
EXHIBIT: Adult and figure.

THE DEPRESSED FLOUR-BEETLE.

Palorus subdepressus Woll.

EXHIBIT: Adult.

ALPHITOBIUS PICEUS Ol.

EXHIBIT: Adult.

BROAD-NOSED GRAIN WEEVIL.

Caulophilus latinasus Say.

For general account see Chittenden, Bul. 8, n. s., Div. Ent., U. S. Dept. Agric., pp. 13–14, 1897.
EXHIBIT: Adult.

THE GRANARY WEEVIL.

Calandra granaria Linn.

For short account, see Chittenden, Farmers' Bul. 45, rev. ed., U. S. Dept. Agric., pp. 4–5, 1897.
EXHIBIT: Adult, work, and figure.

BRACHYTARSUS ALTERNATUS Say.

For life history, notes, and general accounts, see Quaintance, Ent. News, pp. 1–3, plate, 1897.
EXHIBIT: Adult and figure.

HOUSEHOLD INSECTS.

For general account of household insects see Howard, Marlatt, and Chittenden, Bul. 4, n. s., rev. ed., Div. Ent., U. S. Dept. Agric., 1902. Contains articles on all the insects represented in the exhibit.

THE HOUSE CENTIPEDE.

Scutigera forceps Raf.

(While this animal is not an insect, but belongs to the class Myriapoda, it is so regularly associated with the insects that it may appropriately be presented with them. It feeds on flies, moths, roaches, etc.)
For general article see Marlatt, Cir. 48, Div. Ent., U. S. Dept. Agric., 1902.
EXHIBIT: Figure.

THE SILVER FISH.

Lepisma domestica Pack.

For general article see Marlatt, Cir. 49, Div. Ent., U. S. Dept. Agric., 1902.
EXHIBIT: Figure.

THE BOOK-LOUSE.

Troctes divinatoria Müll.

(Formerly *Psocus* and *Atropos.*)
EXHIBIT: Figure.

THE WHITE ANT.

Leucotermes flavipes Koll.

(Formerly *Termes.*)
For general account see Marlatt, Cir. 50, Div. Ent., U. S. Dept. Agric., 1902.
EXHIBIT: Adult and figure.

THE AMERICAN COCKROACH.

Periplaneta americana Linn.

For general article see Marlatt, Cir. 51, Div. Ent., U. S. Dept. Agric, pp. 1–8, 1902.
EXHIBIT: Adult and figure.

THE BLACK "BEETLE."

Blatta orientalis Linn.

For general article see Marlatt, Cir. 51, Div. Ent., U. S. Dept. Agric., pp. 9–10, 1902.
EXHIBIT: Adult and figure.

THE CROTON BUG.

Blattella germanica Linn.

(Formerly *Ectobia.*)
For general article see Marlatt, Cir. 51, Div. Ent., U. S. Dept. Agric., pp. 10–11, 1902.
EXHIBIT: Adult.

THE HOUSE CRICKET.

Gryllus domesticus Linn.

EXHIBIT: Adult.

THE CASE-MAKING CLOTHES MOTH.

Tinea pellionella Linn.

For general article see Marlatt, Cir. 36, Div. Ent., U. S. Dept. Agric., pp. 1–4, 1898.
EXHIBIT: Adult and figure.

THE CARPET MOTH.

Trichophaga tapetzella Linn.

(Formerly *Tinea.*)
For general article see Marlatt, Cir. 36, Div. Ent., U. S. Dept. Agric., p. 5, 1898.
Exhibit: Figure.

THE WEBBING CLOTHES MOTH.

Tineola biselliella Hum.

(Formerly *Tinea.*)
For general article see Marlatt, Cir. 36, Div. Ent., U. S. Dept. Agric., pp. 4–5, 1898.
Exhibit: Adult and figure.

THE RED-LEGGED HAM BEETLE.

Necrobia rufipes DeG.

(Formerly *Corynetes.*)
Exhibit: Adult and figure.

THE LARDER BEETLE.

Dermestes lardarius Linn.

Exhibit: Adult and figure.

THE CARPET BEETLE OR "BUFFALO MOTH."

Anthrenus scrophulariæ Linn.

For general article see Howard, Cir. 5, Div. Ent., U. S. Dept. Agric., 1894.
Exhibit: Adult and figure.

THE CHEESE OR HAM SKIPPER.

Piophila casei Linn.

Exhibit: Adult.

THE FRUIT OR VINEGAR FLY.

Drosophila ampelophila Loew.

For general accounts see Howard, Bul. 4, n. s., Div. Ent., U. S. Dept. Agric., pp. 109–111, 1896; Proc. Wash. Acad. Sci., Vol. II, pp. 589–590, pl. 31, fig. 2, 1900.
Exhibit: Adult and figure.

THE LITTLE RED ANT.

Monomorium pharaonis Linn.

For general article see Marlatt, Cir. 34, Div. Ent., U. S. Dept. Agric., pp. 1–2, 1898. For bibliography and general account see Lintner, 11th Rpt. N. Y. St. Entom., pp. 109–114, 1896.
Exhibit: Adult and figure.

INSECTS WHICH MAY SPREAD DISEASE.

General articles: Howard, Farmers' Bulletin 155, U. S. Dept. Agric., 1902; also Bul. 30, n. s., Div. Ent., U. S. Dept. Agric., pp. 39–45, 1901.

THE YELLOW-FEVER MOSQUITO.

Stegomyia fasciata Fab.

(Is the intermediate host for the parasite of yellow fever. Formerly *Culex.*)
Exhibit: Adult and figure.

THE MALARIA MOSQUITO.

Anopheles maculipennis Meig.

(The most important of the mosquitoes transmitting malaria. Formerly *A. quadrimaculatus.*)
Exhibit: Adult and figure.

25916—No. 53—05——5

THE GREEN BOTTLE FLY.

Lucilia cæsar Linn.

For general article see Howard, Cir. 35, Div. Ent., U. S. Dept. Agric., 1898.
EXHIBIT: Adult and figure.

THE STABLE FLY.

Stomoxys calcitrans Linn.

For special article see Howard, Proc. Wash. Acad. Sci., Vol. II, pp. 577–579, fig. 27, 1900.
EXHIBIT: Adult and figure.

THE HIPPELATES FLY.

Hippelates flavipes Loew.

(Facilitates the spread of the disease known as "pink-eye.")
EXHIBIT: Adult and figure.

THE BROWN DUNG FLY.

Scatophaga furcata Say.

EXHIBIT: Adult and figure.

THE SHINING EXCREMENT FLY.

Morellia micans Macq.
EXHIBIT: Adult and figure.

THE LITTLE HOUSE FLY.

Homalomyia brevis Rond.
EXHIBIT: Adult and figure.

THE FRUIT OR VINEGAR FLY.

Drosophila ampelophila Loew.

EXHIBIT: Adult and figure.

THE SCREW-WORM FLY.

Chrysomyia macellaria Fab.

(Formerly *Compsomyia.*)
For special article see Howard, Proc. Wash. Acad. Sci., Vol. II, p. 562, 1900.
EXHIBIT: Adult and figure.

THE CATTLE TICK.

Boophilus annulatus Say.

(Very common on cattle below the Texas fever line, and known to be responsible for transmission of Texas fever among cattle.)
EXHIBIT: Eggs, adult, and figure.

INSECTS WHICH DIRECTLY INJURE OR ANNOY HUMAN BEINGS.

THE HOUSE FLY.

Musca domestica Linn.

For general article see Howard, Cir. 35, Div. Ent., U. S. Dept. Agric., 1898.
EXHIBIT: Adult and figure.

THE SOUTHERN BUFFALO GNAT.

Simulium pecuarum Riley.

For general article and full life history see Osborn, Bul. 5, n. s., Div. Ent., U. S. Dept. Agric., pp. 41–52, 1896.
EXHIBIT: Adult and figure.

THE CAT AND DOG FLEA.

Ctenocephalus canis Curtis.

(Formerly *Pulex serraticeps* Gerv.)
For general account see Howard and Marlatt, Bul. 4, n. s., rev. ed., Div. Ent., U. S. Dept. Agric., pp. 24–31, 1902. For full bibliography see Baker, Proc. U. S. N. M., Vol. XXVII, p. 438, 1904.
Exhibit: Figure.

THE BLOOD-SUCKING CONE-NOSE.

Conorhinus sanguisuga Lec.

For general article see Howard and Marlatt, Bul. 4, n. s., rev. ed., Div. Ent., U. S. Dept. Agric., pp. 38–42, 1902.
Exhibit: Egg, nymph, adult, and figure.

THE HOUSE MOSQUITO.

Culex pipiens Linn.

For general article and life history see Howard, Bul. 25, n. s., Div. Ent., U. S. Dept. Agric., pp. 22–28, 1900. Treated as *C. pungens* Wied.
Exhibit: Adult and figure.

THE BEDBUG.

Clinocoris lectularia Linn.

(Formerly *Acanthia*, *Cimex*, and *Klinophilos*.)
For general article see Marlatt, Cir. 47, Div. Ent., U. S. Dept. Agric., 1902.
Exhibit: Nymph, adult, and figure.

THE BLACK "BEETLE."

Blatta orientalis Linn.

For general article see Marlatt, Cir. 51, Div. Ent., U. S. Dept. Agric., pp. 9–10, 1902.
Exhibit: Adult and figure.

THE RED BUG.

Leptus irritans Riley.

For general article see H. Osborn, Bul. 5, n. s., Div. Ent., U. S. Dept. Agric., pp. 251–253, 1896.
Exhibit: Figure.

THE HEAD LOUSE.

Pediculus capitis DeG.

For general article see H. Osborn, Bul. 5, n. s., Div. Ent., U. S. Dept. Agric., pp. 166–167, 1896.
Exhibit: Figure.

THE BODY LOUSE.

Pediculus vestimenti Leach.

For general article see H. Osborn, Bul. 5, n. s., Div. Ent., U. S. Dept. Agric., pp. 167–168, 1896.
Exhibit: Figure.

THE CRAB LOUSE.

Phthirius inguinalis Leach.

For general article see H. Osborn, Bul. 5, n. s., Div. Ent., U. S. Dept. Agric., pp. 165–166, 1896.
Exhibit: Eggs, adult, and figure.

INSECTS INJURIOUS TO DOMESTIC ANIMALS.

For general account with illustrations of many of the insects affecting domestic animals see H. Osborn, Bul. 5, n. s., Div. Ent., U. S. Dept. Agric., pp. 1–302, 1896.

THE SOUTHERN BUFFALO GNAT.

Simulium pecuarum Riley.

EXHIBIT: Adult and figure.

THE TURKEY GNAT.

Simulium meridionale Riley.

EXHIBIT: Puparium, adult, and figure.

AMERICAN GADFLY.

Tabanus americanus Forst.

EXHIBIT: Adult.

THE GRAY-STRIPED GREEN-HEAD.

Tabanus lineola Fab.

EXHIBIT: Adult and figure.

THE BLACK GADFLY.

Tabanus atratus Linn.

EXHIBIT: Larva, adult, figure, and figure of parasite *Phanurus tabanivorus* Ashm.

THE GREENHEAD.

Tabanus costalis Wied.

EXHIBIT: Adult.

TABANUS EXUL O. S.

EXHIBIT: Adult.

TABANUS PUNCTIFER O. S.

EXHIBIT: Adult.

TABANUS CINCTUS Fab.

EXHIBIT: Adult.

MEXICAN GADFLY.

Tabanus mexicanus Linn.

EXHIBIT: Adult.

THE BLACK-STRIPED GADFLY.

Tabanus nigrovittatus Macq.

EXHIBIT: Adult.

THE BLACK-STRIPED EAR-FLY.

Chrysops vittatus Wied.

EXHIBIT: Adult and figure.

CHRYSOPS ATROPOS O. S.

EXHIBIT: Adult.

CHRYSOPS HILARIS O. S.

EXHIBIT: Adult.

THE STABLE FLY.

Stomoxys calcitrans Linn.

For special article see Howard, Proc. Wash. Acad. Sci., Vol. II, pp. 577–579, fig. 27, 1900.

EXHIBIT: Adult and figure.

THE HORSE BOT-FLY.

Gastrophilus equi Fab.

EXHIBIT: Eggs, larva, puparia, adult, and figure.

THE "CHIN" FLY.

Gastrophilus nasalis Linn.

EXHIBIT: Adult.

THE WARBLE FLY.

Hypoderma bovis DeG.

(A European species.)
EXHIBIT: Eggs, adult, and figure.

THE OX BOT; OX WARBLE.

Hypoderma lineata Vill.

EXHIBIT: Larva, adult, and figure.

THE SHEEP BOT FLY; HEAD MAGGOT.

Œstrus ovis Linn.

EXHIBIT: Larva, puparia, adult, and figure.

THE HORN FLY.

Hæmatobia serrata R. D.

For special article see Riley and Howard, Insect Life, Vol. II, pp. 93–103.
EXHIBIT: Puparium, adult, and figure.

THE SHEEP TICK.

Melophagus ovinus Linn.

EXHIBIT: Adult and figure.

THE SCREW-WORM FLY.

Chrysomyia macellaria Fab.

(Formerly *Compsomyia.*)
For special article see Howard, Proc. Washington Acad. Sci., Vol. II, p. 562, 1900.
EXHIBIT: Adult and figure.

THE CAT AND DOG FLEA.

Ctenocephalus canis Curtis.

(Formerly *Pulex serraticeps* Gerv.)
For full bibliography see Baker, Proc. U. S. N. M., Vol. XXVII, p. 438, 190
EXHIBIT: Figure.

THE SUCKING HORSE-LOUSE.

Hæmatopinus asini Linn.

EXHIBIT: Figure.

THE SHORT-NOSED OX-LOUSE.

Hæmatopinus eurysternus Nitsch.

EXHIBIT: Figure.

THE LONG-NOSED OX-LOUSE.

Hæmatopinus vituli Linn.

EXHIBIT: Adult and figure.

THE CATTLE LOUSE.

Trichodectes scalaris Nitzch.

EXHIBIT: Adult and figure.

THE SHEEP LOUSE.

Trichodectes sphærocephalus Nitsch.

EXHIBIT: Adult and figure.

FOREST INSECTS.

For treatises and shorter articles see Packard, 5th Rpt. U. S. Ent. Comm., 1886–90; Hopkins, Buls. 21, 28, 32 and 48, Div. Ent., U. S. Dept. Agric., Buls. 16, 17, 31, 32, 35, 36, and 56, W. Va. Agric. Exp. Sta., and Yearbk., U. S. Dept. Agric. f. 1904, pp. 387–404, 1905; Felt, 7th Ann. Rpt. Forest, Fish, and Game Comm., pp. 479–534, 1903.

INSECTS INJURIOUS TO FORESTS IN THE NORTHWESTERN AND NORTHEASTERN UNITED STATES.

NORTHWESTERN STATES.

INJURY BY AMBROSIA BEETLES. ORDER COLEOPTERA, FAMILY SCOLYTIDÆ.

CASE 1.

1. The Western Platypus.

Platypus n. sp.

Excavates long, branching galleries in the sapwood and heartwood of injured, dying, and recently felled Douglas spruce, western hemlock, and giant arborvitæ. California to northern Oregon; also reported from Washington.

Exhibit: Adult and work.

2. Western Hemlock Wood-Stainer.

Gnathotrichus sulcatus Lec.

Excavates numerous branching galleries from a central burrow, the broods living in closely joined side chambers; in the sapwood and heartwood of western hemlock, Douglas spruce, giant arborvitæ, and lowland fir. California to northern Washington; common in hemlock.

Exhibit: Adult and work.

3. The Western Pine Wood-Stainer.

Gnathotrichus n. sp.

Excavates transverse galleries in the surface of the wood and branching ones deep in the sapwood and heartwood, the broods living in short side chambers; western yellow pine and Douglas spruce. Cascade and Rocky Mountain region, California to northeastern Washington.

Exhibit: Adult and work.

4. The Eastern Pine Wood-Stainer.

Gnathotrichus materiarius Fitch.

Excavates several branching galleries from a single-entrance burrow, the broods living in short side chambers in sapwood and heartwood of injured, dying, and recently felled pine and spruce. Eastern United States and Canada. Very common and injurious.

Exhibit: Adult and work.

5. The Spruce Timber-Beetle.

Trypodendron bivittatus Kirby.

Excavates several branching galleries from a single entrance burrow, the brood developing in short side chambers in the sapwood of injured, dying, and recently felled spruce, pine, hemlock, cedar, fir, and larch. Eastern, northeastern, and western United States, Canada, and British Columbia to Alaska; very injurious.
EXHIBIT: Adult and work.

6. The Birch Timber-Beetle.

Trypodendron n. sp.

Excavates branching galleries from an entrance burrow and the broods develop in short side chambers in sapwood and heartwood of paper birch. Kootenai, Idaho, and northwestern Maine; also other birches in Maine.
EXHIBIT: Adult and work.

7. The Cosmopolitan Timber-Beetle.

Xyleborus saxeseni Ratz.

Excavates branching galleries and broad brood chambers from an entrance burrow in sapwood and heartwood of Douglas spruce in Oregon, red oak in Maine, apple and hemlock in West Virginia, and oak, beech, maple, lime tree, poplar, pine, spruce, and fruit trees in Europe. Widely distributed in different countries of the world, especially in Europe, North America, and Japan.
EXHIBIT: Adult and work.

INJURY BY BARK-BEETLES. ORDER COLEOPTERA, FAMILY SCOLYTIDÆ.

CASE 2.

8. The Hairy Cryphalus.

Cryphalus n. sp.

Excavates broad, irregular chambers in dying and dead bark of lowland fir. Port Williams, Wash.
EXHIBIT: Adult and work.

9. The Western Oak Bark-Beetle.

Pityophthorus pubipennis Lec.

Excavates two transverse galleries from a central entrance burrow in the bark of injured, dying, and recently felled California black oak, Pacific post oak, and possibly other oaks. California to Oregon.
EXHIBIT: Adult and work.

10. The Densely-punctured Bark-Beetle.

Pityophthorus confinis Lec.

Excavates a large central chamber and several radiating primary galleries, with very deep egg cavities, in living bark of injured, dying, and recently felled western yellow pine. Northern California, eastern Washington, and western Idaho.
EXHIBIT: Adult and work.

11. The Lodgepole Pine Bark-Beetle.

Pityophthorus n. sp.

Excavates radiating curved longitudinal galleries from a medium-sized central chamber in living bark on large branches of dying lodgepole pine. Eastern Washington.
EXHIBIT: Adult and work.

12. The Knobcone Pine Bark-Beetle.

Pityophthorus n. sp.

Excavates several radiating galleries from a large central chamber in living bark on branches of injured and dying knobcone pine and western yellow pine. Berkeley, Cal., and Albany, Oreg.
EXHIBIT: Work.

13. The Monterey Pine Twig-Beetle

Pityophthorus punctícollis Lec.

Excavates small, radiating, curved galleries from a large central chamber in twigs and branches of dying and felled Monterey pine, shore pine, western yellow pine, knobcone pine, Sitka spruce, and mountain or silver pine. Middle California to northern Washington.
EXHIBIT: Adult and work.

14. The Sitka Spruce Twig-Beetle.

Pityophthorus nitidulus Mann.

Excavates three or four radiating galleries from a medium-sized central chamber in bark of Sitka spruce, silver pine, shore pine, and Douglas spruce. California to Alaska, coast and Cascade region. Common.
EXHIBIT: Adult and work.

15. The Jeffrey Pine Twig-Beetle.

Pityophthorus n. sp.

Excavates small central chambers and long longitudinal galleries in living bark of twigs and branches on living, injured, dying, and recently felled Jeffrey pine and western yellow pine. Mount Shasta, California, to Albany, Oreg., and Moscow Mountains, Idaho.
EXHIBIT: Adult and work.

16. The Smaller Fir Bark-Beetle.

Pityophthorus n. sp.

Excavates transverse galleries from a central chamber in the bark of dying lowland fir and mountain or silver pine. Kootenai, Idaho.
EXHIBIT: Adult and work.

CASE 3.

17. The Mountain Pine Wood-Engraver.

Pityogenes n. sp.

Excavates large central chambers and numerous curved primary galleries in the bark and surface of wood of injured, dying, and recently felled mountain or silver pine and lowland fir. Kootenai, Idaho.
EXHIBIT: Adult and work.

18. The Yellow Pine Wood-Engraver

Pityogenes carinulatus Lec.

Excavates numerous radiating galleries from a large central chamber in living bark and surface of wood of injured, dying, and recently felled western yellow pine and Jeffrey pine. California to eastern Washington, western Idaho, and Colorado.
EXHIBIT: Adult and work.

19. The Western Fir Bark-Beetle.

Tomicus n. sp.

Excavates several radiating, curved, transverse galleries from a small central chamber in the bark and surface of wood of injured, declining, or dying lowland fir, and white fir. Mount Shasta, California, and Moscow Mountains, Idaho. Common.
EXHIBIT: Adult and work.

20. The Smaller Sugar Pine Tomicus.

Tomicus latidens Lec.

Excavates two or three longitudinal galleries from a small central chamber in living bark of branches of dying and recently felled sugar pine. Grants Pass, Oregon; also California to Colorado.
EXHIBIT: Adult and work.

21. The Sitka Spruce Tomicus.

Tomicus concinnus Mann.

Excavates irregular central chambers, and three or four short curved galleries, in partly living bark of injured, dying, and recently felled Monterey pine, shore pine, and Sitka spruce. Coast region, middle California to Alaska.
EXHIBIT: Adult and work.

22. The Oregon Tomicus.

Tomicus oregoni Eichh.

Excavates two or three longitudinal galleries from a small central chamber in the bark of living, injured, dying, and recently felled western yellow pine, lodgepole pine, silver pine, and probably other pines in the Northwest. Destructive to the western yellow pine in western Idaho.
EXHIBIT: Adult and work.

23. The Western Five-Spined Tomicus.

Tomicus confusus Lec.

Excavates one to three long longitudinal galleries from a medium-sized central chamber in the living bark of injured, dying, and recently felled western yellow pine. Mount Shasta, California, and Grants Pass, Oregon; also recorded from southern California and Arizona.
EXHIBIT: Adult and work.

CASE 4.

24. The Silver Pine Tomicus.

Tomicus n. sp.

Excavates very long, straight, longitudinal, and transverse curved galleries from a large central chamber in the bark of living, injured, dying, and recently felled mountain or silver pine and sugar pine. Grants Pass, Oregon, and Kootenai, Idaho. Common and evidently a destructive species.
EXHIBIT: Adult and work.

25. The Four-Spined Tomicus.

Tomicus integer Eichh.

Excavates several longitudinal primary galleries from a large central chamber in living bark of western yellow pine and lodgepole pine. Eastern Washington; also recorded from California, Washington, and Colorado.
EXHIBIT: Adult and work.

CASE 5.

26. The Sugar Pine Wood-Engraver.

Carphoborus n. sp.

Excavates several long, curved, longitudinal galleries in the surface of the wood from a deep central chamber in injured or dying sugar pine, western yellow pine, Douglas spruce, and Sitka spruce. Grants Pass, St. Helen, and Ahlers, Oregon; also middle California.
EXHIBIT: Adult and work.

27. The Western Cedar Bark-Beetle.

Phlœosinus punctatus Lec.

Excavates a single straight longitudinal or curved subtransverse gallery from a basal chamber in the living bark and surface of wood of injured, dying, and recently felled giant arborvitæ, incense cedar, and Port Orford cedar. California to northern and eastern Washington and Rocky Mountain region. Common.
EXHIBIT: Adult and work.

28. The Sitka Spruce Dolurgus.

Dolurgus pumilis Mann.

Excavates irregular, confused galleries in dying and dead bark of dead and felled Sitka spruce. Southern and central Oregon.
EXHIBIT: Adult and work.

CASE 6.

29. The Redwood Bark-Beetle.

Phlœosinus sequoiæ Hopk.

Excavates a long, straight, longitudinal gallery from a basal chamber in living bark of injured, declining, and recently felled redwood and giant arborvitæ. California to northern Washington. Very common in redwood.

EXHIBIT: Adult and work.

CASE 7.

30. The Western Pine-Destroyer.

Dendroctonus brevicomis Lec.

Excavates long, winding galleries through the bark of living and injured western yellow pine and sugar pine. Cascade and Rocky Mountain region, New Mexico to British Columbia. Closely allied with the destructive pine bark-beetle of the East and capable of great destruction of the largest and best timber.

EXHIBIT: Adult and work.

CASE 8.

31. The Dark-Red Turpentine-Beetle.

Dendroctonus valens Lec.

The largest North American bark-beetle. Excavates very broad and long primary galleries, the broods developing in broad side chambers in the bark of living, injured, dying, and recently felled western yellow pine, lodgepole pine, and doubtless most of the other western pines. California to British Columbia and eastward to Kansas and northern Michigan. A variety extends into the eastern United States. Common and injurious, but not necessarily destructive to living timber.

EXHIBIT: Adult and work.

32. The Mountain Pine Dendroctonus.

Dendroctonus n. sp.

A medium-sized black bark-beetle, excavating very long, winding galleries in the bark of living, injured or declining, and recently felled mountain or silver pine and sugar pine. Northern California to Washington eastward to Idaho and Montana. Very common and capable of great destruction of the best timber.

EXHIBIT: Adult and work.

CASES 9 AND 10.

33. The Douglas Spruce Dendroctonus.

Dendroctonus n. sp.

(*Dendroctonus similis* in Bul. 21, n. s., Division of Entomology.)

A large, reddish bark-beetle, excavating long longitudinal, slightly curved primary galleries in the bark of living, injured, and recently felled Douglas spruce and western larch. New Mexico to British Columbia, Pacific coast and eastward through the mountain regions. Very common and capable of destroying much valuable timber.

EXHIBIT: Adult and work.

CASE 10.

34. The Western Pine Hylurgops.

Hylurgops subcostulatus Mann.

Excavates short, slightly curved, longitudinal galleries in the living bark of injured, dying, and recently felled sugar pine, silver pine, western yellow pine, lodgepole pine, and probably other pines on the Pacific coast. Cascade and Rocky Mountain region. Common.

EXHIBIT: Adult and work.

35. The Sitka Spruce Hylurgops.

Hylurgops rugipennis Mann.

Excavates a short, curved, longitudinal and subtransverse gallery from an entrance in the living bark of injured, dying, and recently felled Sitka spruce and shore pine. Coast region, California to Washington and Alaska.

EXHIBIT: Adult and work.

CASE 11.

36. The Fir Wood-Engraver.

Hylesinus n. sp.

Excavates a small central chamber at one side of the junction of two short transverse, slightly curved egg galleries, which are deeply grooved in the surface of the wood; the larvæ also groove or engrave the surface of the wood in an ornamental manner. Infests the lowland fir and Douglas spruce. Port Williams and Port Angeles, Wash. Common.
EXHIBIT: Adult and work.

37. The Larger Fir-Tree Bark-Beetle.

Hylesinus granulatus Lec.

Excavates one or two transverse galleries from a central burrow in the bark and surface of wood near the base of dying lowland fir. Port Williams, Wash.; also recorded from California.
EXHIBIT: Adult and work.

38. The Grand Fir Bark-Beetle.

Hylesinus n. sp.

Excavates two separate, transverse galleries from a central entrance burrow in the bark and surface of wood of recently felled lowland, or grand, fir. Port Angeles and Port Williams, Wash.
EXHIBIT: Work.

39. The Shore Pine Hylesinus.

Hylesinus sericeus Mann.

Excavates one short, longitudinal gallery from the entrance burrow and small side cavity in living bark of injured, dying, and recently felled shore pine. Newport and Seaside, Oreg. Common. Also recorded from California and Alaska.
EXHIBIT: Adult and work.

40. The Ash-Tree Bark-Beetle.

Hylesinus aculeatus Say.

Excavates two long, transverse galleries, from a central entrance burrow and side cavity in the living bark of injured, dying, and recently felled ash. Atlantic to Pacific coast. Common. Specimens from Oregon ash, St. Helen, Oreg.
EXHIBIT: Adult and work.

41. The White-Alder Bark-Beetle.

Hylesinus aspericollis Lec.

Excavates a moderately long, longitudinal gallery from a basal entrance burrow in the bark of living, injured, dying, and recently felled white alder. Newport, Detroit, and Astoria, Oreg., and Seattle, Wash.; also recorded from California. A destructive enemy, causing the death of large trees.
EXHIBIT: Adult and work.

42. The Western Hemlock Bark-Beetle.

Hylesinus n. sp.

Excavates one or two transverse galleries from a central burrow in bark and surface of wood of living, injured, and recently felled western hemlock, causing "gum spot" defects in the wood of living trees, and may cause the death of the best timber. Newport, Oreg., and Port Angeles, Wash.
EXHIBIT: Adult and work.

CASE 12.

43. The Douglas Spruce Hylesinus.

Hylesinus nebulosus Lec.

Excavates two short, straight, longitudinal galleries from a central entrance burrow in the living bark of injured, dying, and recently felled Douglas spruce. California to British Columbia, and eastward to Idaho and Colorado. Very common.
EXHIBIT: Adult and work.

44. The Single Spine Scolytus.

Scolytus unispinosus Lec.

Excavates two short, straight, longitudinal galleries from an entrance burrow in living bark of injured, dying, and recently felled Douglas spruce and western larch. Pacific coast, Cascade and Rocky Mountain region. Common.
EXHIBIT: Adult and work.

45. The Fir-Branch Scolytus.

Scolytus n. sp.

Excavates two short, longitudinal galleries from a central burrow and side cavity in living bark of the branches of recently felled lowland fir. Cascade Mountains near Grants Pass, Oregon.
EXHIBIT: Work.

46. The Smaller Fir-Tree Scolytus.

Scolytus n. sp.

Excavates two transverse or oblique, slightly curved galleries from a central entrance burrow and side cavity in the bark and surface of wood of injured and dying lowland fir. Kootenai, Idaho.
EXHIBIT: Adult and work.

CASE 13.

47. The California White Fir Scolytus.

Scolytus præceps Lec.

Excavates two nearly straight, transverse galleries from a central entrance burrow and basal cavity in living bark and surface of wood of California white fir. Mount Shasta, California, and lowland fir, Sand Point, Idaho. Closely allied in character and habits to No. 48.
EXHIBIT: Adult and work.

48. The Fir Tree Destroyer.

Scolytus subscaber Lec.

Excavates two long, nearly straight, transverse galleries from a central entrance burrow and central or side cavity in bark of living, injured, and declining lowland fir, white fir, and doubtless other species of fir. California to British Columbia, eastern Washington, and western and northern Idaho. The healed-over wounds in living trees cause serious defects and rapid decay of the heartwood.
EXHIBIT: Adult and work.

BARK AND WOOD-BORING GRUBS. ORDER COLEOPTERA, FAMILIES BUPRESTIDÆ AND CERAMBYCIDÆ.

CASE 14 AND PART OF CASE 15.

49. The Douglas Spruce Bark-Borer.

Asemum nitidum Lec.

A round-headed bark-boring grub, boring transverse and winding galleries in the bark of living, injured, and declining Douglas spruce and western hemlock. Cascade Mountains, near Detroit, Oreg., St. Helen, Oreg., and Port Williams, Wash. A very common and destructive enemy of the Douglas spruce. The healed-over wounds in the wood cause serious defects, and the trees die from successive attacks.
EXHIBIT: Adult and work.

50. The White-Pine Sawyer.

Monohammus scutellatus Say.

A large, whitish, round-headed bark and wood boring grub, excavating burrows through the sapwood and deep into the heartwood of fire-scorched, declining, dying, dead, and recently felled mountain or silver pine. Kootenai, Idaho, and white pine in eastern and northern United States. Common and destructive.
EXHIBIT: Adult and work.

51. The Ponderous Sawyer.

Ergates spiculatus Lec.

An exceedingly large, round-headed, bark and wood boring grub, excavating large and deep burrows in the sapwood and heartwood of dead and felled western yellow pine; destructive to the wood of timber that has been dead or felled one or more years. Southern Oregon.

EXHIBIT: Adult and work.

52. The Western Cedar Bark-Borer.

Hylotrupes amethystinus Lec.

A medium-sized bark and wood boring grub, excavating long, winding burrows in the living bark and surface of the wood and boring into the sapwood of injured, dying, and recently felled giant arborvitæ and incense cedar. Northern California to Washington.

EXHIBIT: Work.

53. The Bronze Birch-Borer.

Agrilus anxius Gory.

A long, flat-headed, slender wood-boring grub, excavating long, winding burrows in the bark and surface of the wood of living and injured birch, aspen, and cottonwood trees in northern Idaho, northern Maine, and mountains of West Virginia; also recorded from northern Michigan, New York, Pennsylvania, Virginia, Quebec, and Ontario. A destructive enemy of the birches, aspen, and cottonwood.

EXHIBIT: Adult and work.

INJURY BY GALL INSECTS. ORDER HYMENOPTERA.

PART OF CASE 15.

54. Bird's-eye Pine.

Chalcidid?

A common condition of the wood of the western yellow pine, evidently caused by a minute four-winged gnat, fragments of which were found in pitch galls in the bark of the main stem of young living pine. The formation of corky wood cells around the accumulation of pitch in the wound produces in the subsequent layers of wood the wavy and so-called bird's-eye effect in the wood of larger trees. Insects found in specimen at Albany, Oreg. Specimen of wood from Grants Pass, Oreg.

EXHIBIT: Work.

55. The Oak-Twig Ormyrus.

Ormyrus sp.

A minute four-winged gnat breeding in small gall-like cavities in the living bark on the branches and twigs of the Pacific post oak in western Oregon, causing the small and large oak trees to present a dying appearance, due to the great number of dying twigs and dead leaves. The healed-over wounds produce deformed branches and defective wood.

EXHIBIT: Work.

INJURY BY BARK AND WOOD-BORING GRUBS. ORDER COLEOPTERA, FAMILY BUPRESTIDÆ.

CASE 16.

56. The Western Hemlock Bark-Borer.

Melanophila drummondi Kirby.

A medium-sized, flat-headed, bark-boring grub, excavating shallow, winding burrows through the inner layers of bark of living, injured, and recently felled western hemlock and Douglas spruce; California to northern and eastern Washington and western Idaho, and in the noble fir near Detroit, Oreg. A very common and destructive enemy, killing the largest and best trees, or causing serious "gum spot" defects in the wood of living ones.

EXHIBIT: Adult and work.

INJURY BY BARK-WEEVILS. ORDER COLEOPTERA, FAMILY CURCULIONIDÆ.

PART OF CASE 17.

57. The Sugar Pine Bark-Weevil.

Pissodes sp.

Adult snout-beetle deposits eggs in the outer bark of young living and injured sugar pine, producing small whitish grubs which mine through the inner bark and change to the adult in oval cavities excavated in the surface of the wood, causing the death or abnormal development of the trees. Grants Pass, Oreg.
EXHIBIT: Work.

58. The Douglas Spruce Twig-Weevil.

Curculionid.

A small snout-beetle which deposits eggs in cavities in the bark of the small central shoots and terminal twigs of young, living Douglas spruce. The small whitish grubs mine through the inner bark and enter the pith to change to the adult, killing the twigs and causing a deformed development of the tree. St. Helen, Oreg.
EXHIBIT: Work.

59. The Pine Fungus-Gall Weevil.

Curculionid.

A small snout-beetle breeding in the bark and wood of a common fungus gall on the shore pine and western yellow pine, causing the death of the branches and young trees. Newport, Oreg., and Moscow Mountains, Idaho.
EXHIBIT: Work.

INJURY TO DEAD WOOD AND BARK BY POWDER-POST BEETLES. ORDER COLEOPTERA, FAMILY PTINIDÆ.

PART OF CASE 17.

60. The Pine Wood Perforator.

Ptinid ?

Small white grubs burrow through the dead wood of western yellow pine logs, causing rapid decay. Grants Pass, Oreg.
EXHIBIT: Work.

61. The Giant Arborvitæ Ptinid.

Ptinid.

Small white grubs boring in the dead heartwood of living giant arborvitæ, contributing to the rapid decay of the heartwood. Port Angeles, Wash.
EXHIBIT: Work.

62. The Giant Arborvitæ Dryophilus.

Dryophilus sp.

A small whitish grub and brownish beetle, breeding in the outer bark of the giant arborvitæ. Its work is very common. Detroit, Oreg., and Port Angeles, Wash. "Represents a European family and genus heretofore unrecorded from North America." (Schwarz.)
EXHIBIT: Work.

INJURY TO TWIGS BY BARK MAGGOTS. ORDER DIPTERA, FAMILY CECIDOMYIIDÆ.

PART OF CASE 17.

63. The Pine Twig-Maggot.

Cecidomyiid.

Minute reddish maggot, living in the bark of terminal twigs of the western yellow pine, causing the leaves to turn yellow and die. Moscow Mountains, Idaho. Common.
EXHIBIT: Work.

INJURY BY GALL INSECTS. ORDER HEMIPTERA, FAMILY APHIDIDÆ.

CASE 18.

64. The Sitka Spruce Gall-Aphis.

Chermes sibiricus ?

A minute insect forming cone-like galls on the terminal twigs of the Sitka spruce at Newport, Oreg. Very common and injurious to young trees.
EXHIBIT: Work.

65. The Engelmann Spruce Gall-Aphis.

Chermes sibiricus ? var.

Same habit as 64, but probably a variety or different species. Common on Engelmann spruce at Sand Point, Idaho.
EXHIBIT: Work.

INJURY BY CICADA. ORDER HEMIPTERA, FAMILY CICADIDÆ.

CASE 18.

66. Small Western Cicada.

Cicada sp.

Injuring twigs of Douglas spruce, St. Helen, Oreg.
EXHIBIT: Adult and work.

INJURY BY TWIG-MINER. ORDER LEPIDOPTERA, FAMILY TORTRICIDÆ.

CASE 18.

67. The Pine Twig-Miner.

Tortricid.

A caterpillar of a moth with similar habits to that of the pine moth of Nantucket, excavating burrows through the pith of the terminal twigs and shoots of young western yellow pine. Moscow Mountains, Idaho, where it was common and quite injurious.
EXHIBIT: Work.

NORTHEASTERN STATES.

INJURY BY BARK AND TWIG-BEETLES. ORDER COLEOPTERA, FAMILY SCOLYTIDÆ.

CASE 19.

68. The Balsam Fir Cryphalus.

Cryphalus n. sp.

Excavates irregular, broad, elongate egg chambers to one side of the entrance burrow in the bark and surface of wood, the larval galleries radiating in all directions and deeply grooved in the surface of the wood of the branches of dying and dead balsam fir. Shores and islands of Parmacheene Lake and Rump Mountain, Maine.
EXHIBIT: Work.

69. The Spruce Cryphalus.

Cryphalus n. sp.

Excavates broad transverse egg chambers in the bark and surface of wood; the larval galleries but slightly grooved in the surface of the wood of dying and dead red spruce and balsam fir. Islands and shores of Parmacheene Lake and near Portland, Me. Common in bark of small dying and dead red spruce.
EXHIBIT: Adult and work.

70. The Minute Oak Bark-Beetle.

Pityophthorus minutissimus Zimm.

Excavates two straight transverse galleries from a central entrance burrow and elongate longitudinal chamber in the bark and surface of wood of branches on living, dying, and felled trees, rarely in the thicker bark on the main trunk, of red oak, southern Maine, and other oaks in the eastern United States.
EXHIBIT: Adult and work.

71. The Minute Birch Bark-Beetle.

Pityophthorus n. sp.

Excavates galleries like that of the minute oak bark-beetle (70) in the living and dying bark of branches of the paper birch. Southern Massachusetts.
EXHIBIT: Adult and work.

72. The White Pine Twig-Beetle.

Pityophthorus n. sp.

Excavates several long winding galleries from a central chamber in the bark; deeply grooved in the surface of the wood of small dying and broken branches of white pine. Camp Caribou, Maine.
EXHIBIT: Adult and work.

73. The Minute Spruce-Twig Wood-Engraver.

Pityophthorus n. sp.

Excavates a large central chamber and several curved galleries in the bark and deeply grooved in the surface of the wood of small branches of felled red spruce. Shores of Barkers Lake, Maine, and West Virginia.
EXHIBIT: Work.

74. The Spruce Wood-Engraver.

Pityophthorus cariniceps Lec.

Excavates many short, radiating, curved galleries from a large central chamber in the bark and surface of the wood of twigs and branches of dying trees and main stem of young dying red spruce. Western Maine to Morgantown, W. Va., and Detroit, Mich.
EXHIBIT: Adult and work.

75. The Black Spruce Wood-Engraver.

Pityophthorus n. sp.

Excavates short longitudinal galleries from the entrance burrow in the bark and surface of wood of small dying black spruce. Shores of Parmacheene Lake, northwestern Maine; Peakes Island, in Casco Bay, Maine, and Adirondacks, New York.
EXHIBIT: Adult and work.

76. The White Pine Wood-Engraver.

Pityogenes n. sp.

Excavates numerous short, radiating, curved egg galleries from a large central chamber in the bark and surface of wood of large and small branches and small dying white pine. Northern Maine to West Virginia. Common. Heretofore recognized as *Pityophthorus sparsus* Lec.
EXHIBIT: Adult and work.

CASE 20.

77. The Small Red Spruce Bark-Beetle.

Dryocœtes n. sp.

Excavates three or four short, curved galleries from a small central cavity in the bark and surface of the wood of injured, dying, and recently felled red, white, and black spruce, Maine to northern New York, and the red spruce in the mountains of West Virginia. Common.
EXHIBIT: Adult and work.

78. The American Spruce Bark-Beetle.

Dryocœtes n. sp.

Excavates short, irregular galleries in the living bark of injured, dying, and recently felled red, white, and black spruce in Maine, spruce and pine in West Virginia; also in spruce and pine in Europe. Widely distributed in Europe and eastern North America.

Exhibit: Adult and work.

79. The Birch Bark-Beetle.

Dryocœtes n. sp.

Excavates irregular galleries in the bark of living, injured, and dying birch. Northwestern Maine and mountains of West Virginia. Common. Under favorable conditions causes the death of large trees.

Exhibit: Adult and work.

80. The Balsam Fir Bark-Beetle.

Tomicus balsameus Lec.

Excavates several radiating, curved, transverse galleries from a small central chamber in the living and dying bark of injured and dying balsam fir and red and black spruce. Western Maine; also recorded from northern Michigan and New York.

Exhibit: Adult and work.

81. The White Spruce Bark-Beetle.

Tomicus n. sp.

Excavates several long, radiating, longitudinal egg galleries from a large central chamber in the living bark of recently felled white spruce. Near Camp Caribou, northwestern Maine.

Exhibit: Adult and work.

82. The Hudson Bay Tomicus.

Tomicus n. sp.

Excavates one or two longitudinal primary galleries from a central burrow and small central chambers in the living bark of recently felled white and red spruce. Northwestern Maine; also recorded from Canada and British Columbia.

Exhibit: Adult and work.

CASE 21.

83. The Spruce Bark-Beetle.

Polygraphus rufipennis Kirby.

Excavates three or four short, curved egg galleries from a large central chamber in the surface of the inner bark, through the bark and slightly grooving the surface of the wood of injured, declining, dying, and recently felled black, red, and white spruce, and rare in balsam fir. Very common throughout the northern and Appalachian spruce regions.

Exhibit: Adult and work.

84. The Cedar Bark-Beetle.

Phlœosinus dentatus Lec.

Excavates a single short longitudinal egg gallery from the entrance burrow and basal chambers in the bark and surface of wood of injured and dying red juniper and arborvitæ. Eastern and northwestern United States and Canada. Common.

Exhibit: Adult and work.

86. The Parmacheene Bark-Beetle.

Xylochinus n. sp.

Excavates short, irregular egg galleries in the dead bark of small red spruce and balsam fir. Islands of Parmacheene Lake, Maine.

Exhibit: Work.

25916—No. 53—05——6

87. The Red Spruce Scolytus.

Scolytus n. sp.

Excavates two longitudinal egg galleries from a central entrance burrow and small lateral cavity in the living bark of branches of dying and recently felled red spruce. Northwestern Maine and Peak's Island, near Portland, Me.

EXHIBIT: Adult and work.

CASE 22.

88. The Minute Spruce Bark-Beetle.

Crypturgus atomus Lec.

Enters the galleries of other bark-beetles, from which it excavates numerous very small, irregular galleries through the inner bark of dying and dead black and red spruce and white pine. Northwestern Maine.

EXHIBIT: Adult and work.

89. The Spruce-Destroying Beetle.

Dendroctonus piceæperda Hopk.

Excavates long, longitudinal egg galleries from a basal entrance burrow in the bark, and grooving the wood of living and injured red and white spruce trees. Very destructive to the largest and best timber. Northern Maine to New York and New Brunswick. This is the great enemy of the red and white spruce of the northeastern spruce region, having caused the death and loss of a vast amount of timber. For methods of preventing losses, see Bulletin 28, n. s., Division of Entomology, U. S. Department of Agriculture.

EXHIBIT: Adult and work.

ENEMIES OF BARK-BEETLES. BIRDS AND INSECTS.

PART OF CASE 23.

90. Work of woodpeckers in spruce bark, when infested with the spruce-destroying beetle.

These birds are exceedingly beneficial in destroying the greatest enemy of the spruce.

EXHIBIT: Work.

91. The Cloudy Bark-Beetle Destroyer.

Thanasimus nubilus Kl.

The adults feed on the adults of the spruce-destroying and other bark-beetles, and its young or larvæ prey upon their developing broods. Very beneficial. The specimen of bark shows the pupa case of the Clerid in an egg gallery of the spruce-destroying beetle.

EXHIBIT: Adult and work.

92. Polyporus volvatus Peck.

A fungus growing from entrance and exit burrows of the spruce-destroying beetle in the bark and the spruce-timber beetle in the wood, and from those of other bark and wood boring insects in dying and recently dead spruce trees killed by the spruce-destroying beetle in the Northeast and the fir-destroying Scolytus in the Northwest. The presence of this fungus usually indicates the destructive work of insects.

EXHIBIT: Work.

93. Parasitic Enemy of the Spruce-Destroying Beetle.

Bracon simplex Cress.

The adult deposits eggs in the bark with the developing brood of the bark-beetle; the young maggot-like larvæ feed upon and kill the young. Very common and beneficial. Maine to West Virginia. Also attacks numerous other bark-infesting insects. The bark specimen shows the cocoon in which the matured larva develops to the adult.

EXHIBIT: Adult and work.

INJURY BY BARK AND WOOD BORING GRUBS. ORDER COLEOPTERA, FAMILIES BUPRESTIDÆ, CERAMBYCIDÆ, AND MELANDRYIDÆ.

CASE 24.

94. Buprestid.

Work of flat-headed bark and wood miner in wood of dying balsam fir.
EXHIBIT: Work.

95. The Destructive Spruce-Wood Borer.

Tetropium cinnamopterum Kirby.

A slender, round-headed bark and wood boring grub which excavates winding burrows through the inner bark and surface of the wood, then enters the sapwood and changes to the adult. Infests slightly injured, declining, and recently felled red, black, and white spruce. Maine to West Virginia. Common, and very destructive to the wood of dying trees, and may also cause the death of slightly injured ones.
EXHIBIT: Adult and work.

96. The Cedar Tree Borer.

Hylotrupes ligneus Fab.

A slender, whitish, bark and wood boring grub, excavating winding burrows in the bark and surface of the wood of living arborvitæ, causing the death of the trees and serious defects in the wood of living ones. Common in northwestern Maine.
EXHIBIT: Adult and work.

97. The Blazed-Tree Borer.

Serropalpus barbatus Schall.

A slender, whitish, wood-boring grub, which enters at wounds on living trees and bores deep into the sapwood and heartwood, causing a rapid decay of the infested parts. Common in "blazed" wounds on balsam fir and spruce trees along the trails in northwestern Maine.
EXHIBIT: Work.

98. The Mountain Ash Borer.

Saperda sp.

A destructive enemy of the mountain ash, boring in the healthy wood of the main stem. Northwestern Maine.
EXHIBIT: Work.

INSECT ENEMIES OF FORESTS IN GENERAL.

INJURING THE FOLIAGE.

CATERPILLARS OF BUTTERFLIES AND MOTHS. ORDER LEPIDOPTERA.

CASE 25.

99. The Violet-Tip Butterfly.

Polygonia interrogationis Fab.

Larvæ on elm.
EXHIBIT: Adults, larva.

100. The Mourning-Cloak Butterfly.

Euvanessa antiopa Linn.

Larvæ on foliage of elm, willow, and poplar, sometimes defoliating trees.
EXHIBIT: Adults, larvæ and pupa.

101. The Viceroy Butterfly.

Basilarchia archippus Cram.

Larvæ on willow and poplar.
EXHIBIT: Adult.

102. The Buff-Tipped Butterfly.

Limenitis bredowii Hbn.

Larvæ on oak in California.
EXHIBIT: Adult.

103. The Common Hackberry Butterfly.

Chlorippe celtis Bd. & Lec.

Larvæ on hackberry.
EXHIBIT: Adult, pupa.

104. The Pine Butterfly.

Neophasia menapia Feld.

Larvæ defoliate pine in the Pacific States.
EXHIBIT: Adults.

105. The Locust Leaf Folder.

Epargyreus (*Eudamus*) *tityrus* Fab.

Larvæ on locust.
EXHIBIT: Adults, larva, pupa, cocoon.

106. The Walnut Sphinx.

Cressonia juglandis S. & A.

Larvæ on hickory and walnut.
EXHIBIT: Adults.

107. The Pine Sphinx.

Lapara coniferarum S. & A.

Larvæ on pine in the Eastern States.
EXHIBIT: Adults, larva.

108. The Catalpa Sphinx.

Ceratomia catalpæ Bd.

The larvæ feed upon and frequently defoliate catalpa wherever this tree is native.
EXHIBIT: Adult, larva.

109. The Wavy Ash Sphinx.

Ceratomia undulosa Walk.

Larvæ on ash.
EXHIBIT: Adult, larva.

110. The Ash Sphinx.

Sphinx (*Hyloicus*) *kalmiæ* S. & A.

Larvæ on ash in the Eastern States.
EXHIBIT: Adult.

CASE 26.

111. The Four-Horned Sphinx.

Ceratomia amyntor Hbn.

Larvæ on elm.
EXHIBIT: Adults, larva.

112. The Western Cottonwood Sphinx.

Pachysphinx modesta var. *occidentalis* Hy. Edw.

Larvæ on cottonwood in the Western States.
EXHIBIT: Adult.

113. The Polyphemus Moth.

Telea polyphemus Cram.

The large green larvæ occur on maple, oak, birch, and a variety of other forest trees.
EXHIBIT: Adult.

114. The Hickory Horned Devil.

Citheronia regalis Hbn.

Larvæ on hickory and walnut.
EXHIBIT: Adults, larva.

115. The Imperial Moth.

Basilona imperialis Dru.

The larvæ feed upon pine and many other species of coniferous and deciduous trees.
EXHIBIT: Adults, larva, pupa.

116. The Orange-Striped Oak Worm.

Anisota senatoria Hübn.

The larvæ defoliate oak in the Eastern States.
EXHIBIT: Adults, larvæ, pupæ.

CASE 27.

117. The Spiny Oak Worm

Anisota stigma Hbn.

Larvæ in large colonies on oak, sometimes defoliating trees. Eastern States.
EXHIBIT: Adults, larvæ, pupæ.

118. The Green-Striped Maple Worm.

Anisota rubicunda Fab.

Larvæ in colonies on maple, sometimes defoliating trees. Eastern States.
EXHIBIT: Adults, eggs, larvæ, pupæ.

119. The Buck Moth.

Hemileuca maia Dru.

The black spiny larvæ feed in colonies on oak. Eastern States.
EXHIBIT: Adults.

120. The Pale Tussock Caterpillar.

Halisidota tessellaris Harr.

The pale-yellow, black tufted larvæ feed on elm, sycamore, maple, walnut, oak, etc.
EXHIBIT: Adults.

121. The Pine Tussock Caterpillar.

Euschausia argentata Pack.

The larvæ feed in colonies on pine, cedar, Douglas spruce, etc. Northwestern States.
EXHIBIT: Adults, pupæ, cocoon, work.

122. The Hickory Tussock Caterpillar.

Halisidota caryæ Harr.

The white wooly caterpillars, tufted with black, feed in large colonies on hickory, walnut, elm, and other forest trees, sometimes becoming very destructive. Eastern States.
EXHIBIT: Adults, cocoons.

123. The Oak Tussock Caterpillar.

Halisidota maculata Harr.

The orange and black tufted larvæ on oak, elm, alder, etc. Northern States.
EXHIBIT: Adults.

124. The Fall Webworm.

Hyphantria textor Harr.

Larvæ construct large tents on most species of deciduous forest trees. At times very destructive.
EXHIBIT: Adults, larvæ, pupa.

125. The American Dagger-Moth.

Apatela americana Harr.

The larvæ occur on maple, elm, and a variety of other forest trees.
EXHIBIT: Adults, larva.

126. The Smeared Dagger-Moth.

Apatela oblinita S. & A.

Larvæ occur on nearly all varieties of deciduous trees.
EXHIBIT: Adults, larvæ.

CASE 28.

127. The Underwing Moths.

Genus *Catocala.*

The large gray larvæ of these moths, of which there are many species in the United States, are nocturnal in habit, and conceal themselves during the day in the crevices of the bark on tree trunks and limbs. They devour the foliage of oak, hickory, walnut, poplar, birch, and other species of forest trees.
EXHIBIT: Adults of the following species: *Catocala retecta* Grote, *Catocala vidua* S. & A., *Catocala obscura* Strk., *Catocala cerogama* Guen., *Catocala unijuga* Walk., *Catocala concumbens* Walk., *Catocala cara* Guen.

128. The Semi-Looping Maple Worm.

Homoptera lunata Dru.

The slender green larvæ occur on maple, willow, etc.
EXHIBIT: Adults, larva, pupa.

129. The California Phryganidia.

Phryganidia californica Pack.

Larvæ on oak, sometimes defoliating trees in California.
EXHIBIT: Adults, larvæ.

130. The Poplar Tent-Maker.

Melalopha inclusa Hübn.

Larvæ construct small tents on aspen, cottonwood, and willow. Eastern States.
EXHIBIT: Adults, larva.

131. The Black Hickory Caterpillar.

Datana integerrima G. & R.

Larvæ in colonies on hickory and walnut, sometimes defoliating the trees. Eastern States.
EXHIBIT: Adult, larva, pupæ.

132. The Yellow-Necked Apple-Tree Caterpillar.

Datana ministra Dru.

Larvæ in colonies on birch, oak, and other forest trees, as well as on apple. Eastern States.
EXHIBIT: Adults, eggs, larvæ, pupa.

133. The Striped Hickory Caterpillar.

Datana angusii G. & R.

Larvæ in colonies on hickory and oak. Eastern States.
EXHIBIT: Adults.

134. The Green Oak Caterpillar.

Nadata gibbosa S. & A.

Larvæ on oak, maple, and other forest trees.
EXHIBIT: Adult, larvæ.

135. The Rosy Hyparpax.

Hyparpax aurora S. & A.

Larvæ on oak in Eastern States.
EXHIBIT: Adults.

CASE 29.

136. The Red-Humped Oak Caterpillar.

Symmerista albifrons S. & A.

Larvæ on oak, sometimes defoliating trees in the Eastern States.
EXHIBIT: Adults, larva, pupa.

137. The Rusty Tussock-Moth.

Notolophus antiqua Linn.

Larvæ on most species of deciduous forest trees in America and Europe.
EXHIBIT: Adults.

138. The California Tussock-Moth.

Hemerocampa vetusta Bd.

Larvæ on various species of deciduous forest trees in California.
EXHIBIT: Adults, larva.

139. The White-Marked Tussock-Moth.

Hemerocampa leucostigma S. & A.

Larvæ sometimes defoliate elm, maple, and other deciduous forest trees in the Eastern States.
EXHIBIT: Adults, egg-mass, larva, cocoon.

140. The Dark Tussock-Moth.

Olene achatina S. & A.

Larvæ on various deciduous forest trees in the Eastern States.
EXHIBIT: Adult.

141. The Brown-Tail Moth.

Euproctis chrysorrhœa Linn.

Introduced from Europe and destructive to deciduous forest trees in Massachusetts and New Hampshire.
EXHIBIT: Adults.

142. The Gypsy Moth.

Porthetria dispar Linn.

Introduced from Europe and very destructive to nearly all deciduous and a few coniferous forest trees in Massachusetts. It has recently become established in portions of the city of Providence, Rhode Island.
EXHIBIT: Adults, larvæ.

143. The Forest Tent-Caterpillar.

Malacosoma (*Clisiocampa*) *disstria* Hbn.

Larvæ at times very destructive to maple, oak, aspen, cottonwood, gum, and nearly all other deciduous forest trees throughout the United States.
EXHIBIT: Adults, eggs, larvæ, pupa, cocoons.

144. The Tufted Tent-Caterpillar.

Malacosoma (*Clisiocampa*) *constricta* Stretch.

Larvæ on oak in California.
EXHIBIT: Adults, eggs, larvæ.

145. The American Tent-Caterpillar.

Malacosoma (*Clisiocampa*) *americana* Fab.

Larvæ principally destructive to fruit trees, but also to wild cherry and a few other forest trees in the Eastern States.
EXHIBIT: Adults, eggs.

146. The Rocky Mountain Tent-Caterpillar.

Malacosoma (*Clisiocampa*) *fragilis* Stretch.

Larvæ feed on deciduous forest trees generally, and are at times very destructive. Rocky Mountain States.
EXHIBIT: Adults, eggs, larvæ.

147. The Northwestern Tent-Caterpillar.

Malacosoma (*Clisiocampa*) *pluvialis* Dyar.

Larvæ on most species of deciduous forest trees in the Northwestern States.
EXHIBIT: Adults, larva, cocoon.

148. The Californian Tent-Caterpillar.

Malacosoma (*Clisiocampa*) *californica* Pack.

Larvæ on oak in California.
EXHIBIT: Adults, larva.

149. The Spring Canker-Worm.

Paleacrita vernata Harr.

The larvæ feed upon the surface of the leaves of various forest and shade trees, especially upon elm in the Eastern States.
EXHIBIT: Adults, pupa.

CASE 30.

150. The Cherry-Leaf Webworm.

Calocalpe undulata Linn.

The larvæ live in webs on the terminal shoots of black cherry.
EXHIBIT: Adults, work.

151. The Western Oak Span-Worm.

Therina somniaria Hulst.

The larvæ occur on oak in the Northwestern States, sometimes defoliating trees.
EXHIBIT: Adults, pupæ.

152. The Large Forest Span-Worm.

Sabulodes transversata Dru.

Larvæ occur on maple, poplar, oak, etc.
EXHIBIT: Adults, larva.

153. The Crinkly Flannel Moth.

Lagoa crispata Pack.

The larvæ, which somewhat resemble the slug caterpillars, feed upon oak, poplar, and a variety of other deciduous trees.
EXHIBIT: Adults.

154. The Oak Webworm.

Archips (Cacœcia) fervidana Clem.

Larvæ live in colonies on oak, sheltered by a web inclosing leaves and a mass of excrement.
EXHIBIT: Adults.

155. The Slug Caterpillars.

Family *Cochlidiidæ.*

These bright-colored slug-like larvæ feed very generally on foliage of most deciduous trees.
EXHIBIT: the following species: *Sibine stimulea* Clem., adults, larva, cocoon; *Euclea delphinii* Bd., adult; *Euclea indetermina* Bd., adult.

THE FALSE CATERPILLARS OR SAWFLIES. FAMILY TENTHREDINIDÆ.

PART OF CASE 30.

156. Abbot's White-Pine Sawfly.

Lophyrus abbotii Leach.

This species, together with several closely allied forms, is at times very destructive to pine.
EXHIBIT: Adults, larvæ, cocoons.

157. The Larch Sawfly.

Nematus erichsonii Hartig.

One of the most destructive forest insects; the larvæ at various times past entirely defoliated the larch throughout the Northeastern States and caused the death of a large proportion of the trees.
EXHIBIT: Adults.

158. The Large American Sawfly.

Cimbex americana Leach.

Larvæ destroy foliage of elm, willow, poplar, and linden.
EXHIBIT: Adult.

MISCELLANEOUS FOLIAGE INSECTS.

PART OF CASE 30.

159. The Common Walking Stick.

Diapheromera femorata Say.

Young and adults devour foliage of deciduous forest trees.
EXHIBIT: Adult.

160. Katydid.

Microcentrum laurifolium Linn.

Young and adults feed on foliage of trees.
EXHIBIT: Adult, eggs.

LEAF-BEETLES. FAMILY SCARABÆIDÆ.

PART OF CASE 31.

161. The Rhinoceros Beetle.

Dynastes tityus Linn.

Larvæ mine in decaying stumps; adults destroy foliage of ash.
EXHIBIT: Adults.

162. The Goldsmith Beetle.

Cotalpa lanigera Linn.

Adults on oak, poplar, and other deciduous trees, sometimes defoliating them.
EXHIBIT: Adults.

THE LEAF-BEETLES. FAMILY CHRYSOMELIDÆ.

PART OF CASE 31.

163. The Imported Elm Leaf-Beetle.

Galerucella luteola Müll.

A very serious enemy to the elm in the Eastern States.
EXHIBIT: Adults, work.

164. The Larger Elm Leaf-Beetle.

Monocesta coryli Say.

Adults and larvæ destroy foliage of elm in sections of the Middle West.
EXHIBIT: Adults, work.

165. The Striped Willow Leaf-Beetle.

Melasoma scripta Fab.

Both larvæ and adults feed on foliage of poplar and willow, and are at times very destructive to these trees. An especial enemy of the osier willow industry.
EXHIBIT: Adults, pupæ.

166. The Spotted Willow Leaf-Beetle.

Melasoma lapponica Linn.

Habits similar to the above, but less abundant and injurious.
EXHIBIT: Adults.

INJURING THE FRUIT.

THE WEEVILS. FAMILY CURCULIONIDÆ.

PART OF CASE 31.

167. The Nut Weevils.

Genus *Balaninus*.

There are numerous species, the larvæ of which live within acorns and nuts of various sorts.
EXHIBIT: Adults of the following species: *Balaninus nasicus* Say, *Balaninus caryæ* Horn, *Balaninus quercus* Horn.

168. The Walnut Fruit Weevil.

Conotrachelus juglandis Lec.

The larvæ live in green fruit of walnut.
EXHIBITS: Adults.

CONE AND NUT WORMS. ORDER LEPIDOPTERA.

PART OF CASE 31.

169. The Hickory Husk-Worm.

Grapholitha caryana Fitch.

The larvæ live within the immature nuts and husks of the hickory and pecan.
EXHIBIT: Adults, work.

170. The Spruce Cone-Worm.

Dioryctia reniculella Grt.

Larvæ attack cones of spruce.
EXHIBIT: Adult, work.

171. The Southern Pine Cone-Worm.

An insect closely allied to the spruce cone-worm which attacks the cone of the Southern longleaf pine.
EXHIBIT: Work.

INJURING THE TWIGS AND SMALLER BRANCHES.

THE CICADAS. FAMILY CICADIDÆ.

PART OF CASE 31.

172. The Seventeen-Year Cicada.

Tibicen septendecim Linn.

A most destructive species, but owing to the long period required by the young to reach maturity only injurious during certain years.
EXHIBIT: Adults, pupa, work.

THE SCALE INSECTS. FAMILY COCCIDÆ.

PART OF CASE 31.

173. The Cottony Maple Scale.

Pulvinaria innumerabilis Rathv.

Becomes at times very abundant on twigs of maple.
EXHIBIT: Adult scales on twigs.

174. The Gloomy Maple Scale.

Aspidiotus tenebricosus Comst.

At times very abundant on maple. Principally injurious to shade trees in the neighborhood of towns.
EXHIBIT: Adult scales on bark.

175. The Hickory Soft Scale.

Lecanium sp.

At times abundant on hickory and pecan in the Southern States.
EXHIBIT: Adult scales on twigs.

THE TWIG WEEVILS. FAMILY CURCULIONIDÆ.

PART OF CASE 32.

176. The Western Spruce Weevil.

Pissodes sp.

Attacks and kills the terminal shoots of Sitka spruce, causing deformed trees. Northwestern States.
EXHIBIT: Adults, larvæ, work.

177. The White-Pine Weevil.

Pissodes strobi Peck.

Attacks and kills the terminal shoots of white pine, spruce, and deodar, causing serious deformity to the tree; also breeds in the bark of the lower portions of the trunk of pine and spruce, hastening the death of injured trees. Eastern States.
EXHIBIT: Adults, work. Sections of young white pine showing nature of injury to terminal shoots. (Large case.)

ROUND-HEADED BORERS. FAMILY CERAMBYCIDÆ.

PART OF CASE 32.

178. The Oak Pruner.

Elaphidion villosum Fab.

The larvæ bore in twigs of living oak, hickory, etc., causing them to break and fall.
EXHIBIT: Adults, work.

179. The Hickory Twig Girdler.

Oncideres cingulata Say.

The adult girdles the twigs of oak, hickory, persimmon, and other trees, sometimes so extensively as to cause serious injury.
EXHIBIT: Adults, work, figure.

INJURING THE INNER BARK AND SAPWOOD.

THE BARK WEEVILS. FAMILY CURCULIONIDÆ.

CASE 33.

180. The Cypress Weevil.

Eudocimus mannerheimii Boh.

The adults feed on the bark of bald cypress twigs, causing their death, and the larvæ mine the inner bark of injured and recently felled trees. Southern States.
EXHIBIT: Adult, larva, work.

181. The Pales Weevil.

Hylobius pales Hbst.

The larvæ bore into the inner bark of stumps and roots of recently felled, dying, and injured pine. Eastern States.
EXHIBIT: Adults.

182. The Pitch-Eating Weevil.

Pachylobius picivorus Germ.

Has habits similar to the pales weevil. Eastern States.
EXHIBIT: Adults.

183. The Walnut Weevil.

Cryptorhynchus parochus Hbst.

The larvæ mine the inner bark and sapwood of weakened and recently dead walnut.
EXHIBIT: Adults, work.

184. The Fir Weevil.

Pissodes dubius Rand.

The larvæ mine the inner bark of balsam fir, hastening the death of injured trees. Northeastern States.
EXHIBIT: Adults, larvæ, work.

THE ROUND-HEADED BORERS. FAMILY CERAMBYCIDÆ.

CASE 34.

185. The White-Pine Sawyer.

Monohammus scutellatus Say.

Larvæ mine the inner bark and bore deep into the sapwood of white and silver pine, hastening the death of dying trees and injuring saw logs.
EXHIBIT: Adults, work.

186. The Common Pine Sawyer.

Monohammus confusor Kirby.

The larvæ mine the inner bark and bore large holes into the sapwood of dying trees and saw logs of pine and spruce.
EXHIBIT: Adults, larva.

187. The Ponderous Pine-Borer.

Ergates spiculatus Lec.

Larvæ bore in dead pine logs, injuring them for timber. Northwestern States.
EXHIBIT: Adults, larva, work.

188. The Knob-Horned Pine-Borer.

Acanthocinus nodosus Fab.

The larvæ mine the inner bark of pine stumps and large logs.
EXHIBIT: Adults.

189. The Obsolete Pine-Borer.

Acanthocinus obsoletus Ol.

The larvæ mine the inner bark of freshly killed pine.
EXHIBIT: Adults.

190. The Small Pine Bark-Borer.

Ceratographis pusillus Kirby.

Larvæ mine the inner bark of dead and dying pine.
EXHIBIT: Adults.

191. The Lesser Pine-Borer.

Asemum mœstum Hald.

Larvæ bore into sapwood of dead pine and spruce logs and stumps. Eastern States.
EXHIBIT: Adults.

CASE 35.

192. The Poplar Borer.

Saperda calcarata Say.

Larvæ bore in trunks of living aspen, cottonwood, and willow, causing great destruction to these trees.
EXHIBIT: Adults, work.

193. The Common Elm-Tree Borer.

Saperda tridentata Ol.

The larvæ mine the bark and sapwood of dead, dying, and healthy elm, often causing great destruction.
EXHIBIT: Adults, work.

194. The Poplar Girdler.

Saperda concolor Lec.

Larvæ mine in green bark of aspen and cottonwood saplings, girdling the trunks and causing large swellings; also attack willow.
EXHIBIT: Adults, work.

195. The Sugar-Maple Borer.

Plagionotus speciosus Say.

Larvæ mine the inner bark and sapwood of recently dead, dying, and living maple, often causing the death of weakened trees.
EXHIBIT: Adults.

196. The Locust Borer.

Cyllene robiniæ Forst.

Larvæ mine the wood and bark of living locust, causing great damage and destruction.
EXHIBIT: Adults, work.

197. The Linden Borer.

Saperda vestita Say.

Larvæ mine the inner bark and bore into the trunk of linden, causing much injury.
EXHIBIT: Adults, work.

198. The Chestnut Callidium.

Callidium æreum Newm.

Larvæ mine inner bark of chestnut, hastening, and perhaps causing, death of aged or injured trees.
EXHIBIT: Adults, larvæ, pupa.

199. The Belted Chion.

Chion cinctus Dru.

The larvæ mine the inner bark and bore into the wood of trunk and branches of dying and recently dead hickory, chestnut, oak, etc.
EXHIBIT: Adults, larva, work.

200. The Dusty Oak Borer.

Romaleum atomarium Dru.

Larvæ in stumps and logs of recently dead oak.
EXHIBIT: Adults.

CASE 36.

201. The Beautiful Hickory Borer.

Goes pulchra Hald.

Larvæ bore in hickory.
EXHIBIT: Adults.

202. The Tiger Hickory Borer.

Goes tigrina DeG.

Larvæ mine the inner bark and sapwood of living hickory and oak.
EXHIBIT: Adults.

203. The White-Lined Cypress Borer.

Physocnemum andreæ Hald.

Larvæ mine the inner bark and outer sapwood of bald cypress logs. Southern States.
EXHIBIT: Adults, larva, work.

204. The Common Hickory Borer.

Saperda discoidea Fab.

Larvæ mine the inner bark of injured, dying, and recently dead hickory.
EXHIBIT: Adults.

205. The Blue-Winged Walnut Borer.

Gaurotes cyanipennis Say.

Larvæ infest walnut.
EXHIBIT: Adults.

206. The Lichen-like Beetle.

Leptostylus aculiferus Say.

Larvæ mine the inner bark of dying and dead tulip-tree (*Liriodendron*).
EXHIBIT: Adults.

207. The Ash-Colored Mulberry Borer.

Hetœmis cinerea Ol.

Adults feed on the foliage and larvæ mine the green bark and sapwood of dying and injured mulberry.
EXHIBIT: Adults.

208. The Painted Hickory Borer.

Cyllene picta Dru.

Larvæ bore in the trunks of dead, dying, and sometimes healthy hickory trees.
EXHIBIT: Adults.

CASE 37.

209. The Curious Cypress Borer.

Curius dentatus Newm.

Larvæ mine the smaller branches of young bald cypress.
EXHIBIT: Adults, work.

210. The Banded Ash Borer.

Neoclytus capræa Say.

Larvæ very injurious to dying trees and saw logs of black ash, boring numerous holes through the wood.
EXHIBIT: Adults, work.

211. The Rigid Cypress Borer.

Œme rigida Say.

Larvæ mine inner bark of girdled bald cypress and dying white cedar.
EXHIBIT: Adult, larva, work.

212. The Southern Oak Borer.

Mallodon dasystomus Say.

Larvæ bore in healthy live oak, hackberry, and hickory trees, greatly injuring them. Southern States.
EXHIBIT: Adults.

213. The Live-Oak Root-Borer.

Mallodon melanopus Linn.

Larvæ bore into the roots of young oaks, causing dwarfed and worthless trees. Southern States.
EXHIBIT: Adult.

214. The Variable Oak Borer.

Phymatodes variabilis Fab.

Larvæ mine inner bark of dying and recently dead oak; are also injurious to tan-bark.
EXHIBIT: Adult, work.

215. The Thunderbolt Beetle.

Arhopalus fulminans Fab.

Larvæ mine the inner bark and sapwood of chestnut and oak.
EXHIBIT: Adults.

216. The Lesser Prionus.

Orthosoma brunneum Forst.

Larva in decaying logs and stumps of nearly all forest trees.
EXHIBIT: Adults.

217. The Cottonwood Root-Borer.

Plectrodera scalator Fab.

Larvæ in roots of aspen and cottonwood.
EXHIBIT: Adults.

218. The Broad-Necked Prionus.

Prionus laticollis Dru.

Larvæ in roots of oak, aspen, and cottonwood. Sometimes destructive. Also in stumps of pine.
EXHIBIT: Adults.

CASE 38.

219. The Destructive Spruce Wood-Borer.

Tetropium cinnamopterum Kirby.

Larvæ mine green bark and wood of injured and dying spruce, hastening death and promoting decay.
EXHIBIT: Adults, larvæ, work.

220. The Wavy Spruce Borer.

Xylotrechus undulatus Say.

Larvæ mine the inner bark and sapwood of Douglas spruce, fir, and hemlock.
EXHIBIT: Adults.

221. The Canadian Leptura.

Leptura canadensis Fab.

Larvæ mine sapwood of dead spruce and hemlock, inducing rapid decay.
EXHIBIT: Adults.

222. The Red-Headed Clytus.

Neoclytus erythrocephalus Fab.

Larvæ mine in dead and dying bark and sapwood of a great variety of forest trees, maple, ash, hickory, sweet gum, bald cypress, etc.
EXHIBIT: Adults.

223. The Ribbed Pine Borer.

Rhagium lineatum Ol.

Larvæ mine the inner bark of dying and dead pine, spruce, and some other conifers.
EXHIBIT: Adults, larvæ, pupa, work.

224. The Black-Horned Pine Borer.

Callidium antennatum Newm.

Larvæ mine inner bark and wood of dying and dead pine, cedar, etc.
EXHIBIT: Adults, work.

225. The Four-Marked Ash Borer.

Eburia quadrigeminata Say.

Larvæ infest ash and hickory.
EXHIBIT: Adults.

226. The Cedar Borer.

Hylotrupes ligneus Fab.

Larvæ mine inner bark and sapwood of white cedar, causing the death of the trees.
EXHIBIT: Adults, larvæ, pupa, work.

227. The Banded Urographis.

Urographis fasciatus Horn.

The larvæ mine the inner bark of dead oak, maple, chestnut, sweet gum, hickory, walnut, sourwood, dogwood, and probably nearly all deciduous trees. Eastern States.
EXHIBIT: Adults.

228. The Rustic Borer.

Xylotrechus colonus Fab.

Larvæ mine the inner bark and sapwood of recently cut or dying oak, chestnut, hickory, maple, and other hard woods.
EXHIBIT: Adults.

THE FLAT-HEADED BORERS. FAMILY BUPRESTIDÆ.

CASE 39.

229. The Bronze Birch Borer.

Agrilus anxius Gory.

The larvæ mine the inner bark of living and injured birch, aspen, and cottonwood. Very destructive in the Northern States.
EXHIBIT: Adults, work.

230. The Two-Lined Chestnut Borer.

Agrilus bilineatus Web.

The slender larvæ mine the inner bark of recently dead, injured, and healthy chestnut and oak. One of the principal causes for the wholesale destruction of chestnut in the Southern States.
EXHIBIT: Adults, work.

231. The Eastern Hemlock Bark-Borer.

Melanophila fulvoguttata Harr.

Larvæ mine the inner bark of recently dead and injured hemlock in the Eastern States.
EXHIBIT: Adults, work.

232. The Flat-Headed Apple-Tree Borer.

Chrysobothris femorata Fab.

The larvæ mine the inner bark of recently dead and injured oak, chestnut, hickory, maple, and some other deciduous forest trees. Eastern States.
EXHIBIT: Adults, larvæ, pupæ, work.

CASE 40.

233. The Flat-Headed Pine Bark-Borer.

Chrysobothris dentipes Germ.

Larvæ mine the inner bark of recently dead and dying pine.
EXHIBIT: Adults.

234. The Flat-Headed Hickory Borer.

Dicerca obscura Fab.

Larvæ bore into the trunk and limbs of hickory, maple, and some other deciduous trees.
EXHIBIT: Adults.

235. The Western Hemlock Bark-Borer.

Melanophila drummondi Kirby.

The larvæ mine the inner bark of dead and healthy western hemlock and Douglas spruce, causing defects in the lumber and killing trees. Northwestern States.
EXHIBIT: Adults, larva, pupa, work.

INJURING THE WOOD.

THE FLAT-HEADED BORERS. FAMILY BUPRESTIDÆ.

PART OF CASE 40.

236. The Turpentine Borer.

Buprestis apricans Hbst.

The larvæ bore into the solid resinous heartwood of longleaf pine after "boxing" by turpentine workers, so weakening the trunk as to cause it to break and spoiling portions of it for lumber.
EXHIBIT: Adult, work.

237. The Golden Buprestis.

Buprestis aurulenta Linn.

Larvæ bore into trunks of dead pines, spruce, fir, and other conifers.
EXHIBIT: Adults.

238. The Heart-wood Pine Borer.

Chalcophora virginiensis Dru.

Larvæ bore into trunks of dead pine and spruce and into heartwood of living trees.
EXHIBIT: Adults, work.

THE TIMBER BEETLES. FAMILY SCOLYTIDÆ.

PART OF CASE 41.

240. The Hickory Timber-Beetle.

Xyleborus celsus Eich.

The adults excavate long branching galleries in dying trees and logs of hickory.
EXHIBIT: Adults, work.

THE POWDER-POST BEETLES. FAMILY PTINIDÆ.

PART OF CASE 41.

242. The Red-Shouldered Ptinid Borer.

Sinoxylon basilare Say.

Adult bores short curved galleries in branches of dead hickory, persimmon, and most other deciduous trees; the larvæ bore the solid wood.
EXHIBIT: Adults, work.

243. Powder-Post Beetles.

Genus *Lyctus*.

EXHIBIT: Work, sections of seasoned ash and hickory showing characteristic injury by the beetles and larvæ.

THE TIMBER WORMS. FAMILIES BRENTHIDÆ AND LYMEXYLIDÆ.

PART OF CASE 41.

244. The Northern Brenthis.

Eupsalis minuta Dru.

The larvæ excavate extensive galleries in solid wood of recently dead and dying oak, chestnut, beech, elm, bald cypress, and most other species of deciduous forest trees.
EXHIBIT: Adults, work.

245. The Chestnut Timber Worm.

Lymexylon sericeum Harr.

The larvæ excavate extensive galleries in the heartwood and sapwood of living and dead chestnut and oak.
EXHIBIT: Adult, work.

THE CARPENTER WORMS. ORDER LEPIDOPTERA, FAMILY COSSIDÆ.

CASE 42.

246. The Leopard Moth.

Zeuzera pyrina Fab.

An introduced species very injurious to forest, shade, and orchard trees in the vicinity of New York City.
EXHIBIT: Adults, larvæ, pupa, work.

247. The Oak Carpenter Worm.

Prionoxystus robiniæ Peck.

The larvæ mine in living oak and locust, and are sometimes very destructive, especially to aged trees.
EXHIBIT: Adults, work.

248. The Poplar Carpenter Worm.

Cossus centerensis Lint.

The larvæ mine in trunks of cottonwood.
EXHIBIT: Adults.

THE HORNTAILS OR WOOD WASPS. FAMILY UROCERIDÆ.

CASE 43.

249. The Pigeon Tremex.

Tremex columba Linn.

Larvæ mine the sapwood of hickory, oak, poplar, maple, and other deciduous forest trees, hastening the death of those weakened by other causes.
EXHIBIT: Adults, work.

250. The Pale Tremex.

Tremex sericeus. Say.

Habits like the pigeon tremex.
EXHIBIT: Adults.

251. The White-Horned Horntail.

Urocerus albicornis Fab.

Attacks spruce, hemlock, and fir.
EXHIBIT: Adults, larva, pupa, work.

252. The Blue Horntail.

Paururus cyaneus Fab.

Attacks spruce and fir.
EXHIBIT: Adult.

253. The Banded Horntail.

Urocerus abdominalis Harr.

Attacks spruce.
EXHIBIT: Adults.

254. The Yellow-Winged Horntail.

Urocerus flavipennis Kirby.

Attacks spruce.
EXHIBIT: Adults.

255. The Small-Pine Horntail.

Paururus pinicola Ashm.

Larvæ in pine.
EXHIBIT: Adults.

256. The Black-Pine Horntail.

Paururus hopkinsi Ashm.

Larvæ in pine.
EXHIBIT: Adults.

PARASITIC ENEMIES. FAMILY ICHNEUMONIDÆ.

PART OF CASE 43.

257. The Lunated Long-Sting.

Thalessa lunator Fab.

There are several quite similar species of these insects, which, by means of the long, thread-like appendage to the body, deposit their eggs within the galleries of the horntail larvæ, upon which their own larvæ are parasitic.

EXHIBITS: Adults.

INJURING INNER BARK.

THE BARK-BEETLES. FAMILY SCOLYTIDÆ.

CASE 44.

258. The Pine-Destroying Beetle of the Black Hills.

Dendroctonus ponderosæ Hopk.

Attacks healthy pine and spruce in the Black Hills of South Dakota and Rocky Mountain region. The adult beetles excavate characteristic galleries in the inner bark of dead, dying, and healthy trees. Their eggs are deposited along the sides of these galleries, and the larvæ developing from them mine the inner bark. It is estimated that it has been the primary cause of the destruction of 1,000,000,000 feet of western yellow pine (*Pinus ponderosa*) in the Black Hills.

EXHIBIT: Adults, work. Sections of trunks of western yellow pine attacked by beetles showing pitch tubes on surface and marks of galleries in inner bark.

CASE 45.

259. The Destructive Pine Bark-Beetle.

Dendroctonus frontalis Zimm.

Attacks healthy pine and spruce in the Southern States. It is capable of enormous destruction and, though usually held in check by natural causes, has at various times past so increased as to seriously menace the entire stand of pine and spruce in portions of the Southeastern States, notably in West Virginia in 1891–92.

EXHIBIT: Adults, work. Markings on surface of wood of beetle-killed tree; appearance of outer bark of beetle-killed trees; outer bark of tree scaled off by woodpeckers in search of beetles and their larvæ.

260. The Oregon Tomicus.

Tomicus oregoni Eich.

A secondary enemy of pine, attacking and hastening the death of trees primarily attacked by the pine-destroying beetle.

EXHIBIT: Work. Section of top of western yellow pine, showing galleries of adult beetles in inner bark.

261. The Companion Bark-Beetle.

Tomicus avulsus Eich.

A common species infesting pine in the Southern States. When abundant it attacks and kills healthy trees, but it is especially common as a secondary enemy in company with the destructive bark-beetle *Dendroctonus frontalis* Zimm.

EXHIBIT: Adults, work.

CASE 46.

262. The Lawson Cypress Bark-Beetle.

Phlœosinus cupressæ Hopk.

Attacks transplanted Lawson and Monterey cypress in California. It also attacks redwood.

EXHIBIT: Adults, work.

263. The Hickory Bark-Beetle.

Scolytus quadrispinosus Say.

A common bark-beetle in hickory, frequently causing the death of trees. The adults also do some damage by gnawing the base of small twigs, causing their death.
EXHIBIT: Adults, work.

CASE 47.

264. The Mountain Pine Dendroctonus.

Dendroctonus n. sp.

Attacks living, injured, and recently felled mountain or silver pine, sugar pine, and lodgepole pine in the Northwestern States. Very common and capable of great destruction to the best timber.
EXHIBIT: Adults, work.

265. The Arizona Dendroctonus.

Dendroctonus n. sp.

A common bark-beetle in the southern Rocky Mountain region, attacking healthy western yellow pine, and, in company with several closely allied species, causing great destruction of large quantities of the best timber.
EXHIBIT: Adults, work.

266. The Bald Cypress Bark-Beetle.

Phlœosinus n. sp.

Attacks recently felled and girdled bald cypress in the Southern States.
EXHIBIT: Adults, work.

PREDACEOUS AND PARASITIC ENEMIES OF DESTRUCTIVE FOREST INSECTS. THE CLERIDS. FAMILY CLERIDÆ.

CASE 48.

267. The Dubius Clerid.

Thanasimus dubius Fab.

The beetles destroy the adults, and the larvæ prey upon the developing broods of many species of bark-beetles in pine and spruce, and are frequently of the greatest benefit in holding in check the more destructive of these.
EXHIBIT: Adults.

268. The Spider-like Clerid.

Clerus sphegeus Fab.

The adults feed upon the adults and the larvæ upon the developing broods of numerous destructive bark-beetles in pine, spruce, and fir. Western States.
EXHIBIT: Adults.

269. The European Bark-Beetle Destroyer.

Thanasimus formicarius Linn.

Is very destructive to bark-beetles infesting pine and spruce in Europe, and was introduced into America in 1892 to act as a check to the alarming increase of the destructive bark-beetle (*Dendroctonus frontalis*) in West Virginia.
EXHIBIT: Adults.

270. The Orange-Banded Clerid.

Clerus ichneumoneus Fab.

The larvæ prey upon the developing broods of the hickory bark-beetle (*Scolytus quadrispinosus*).
EXHIBIT: Adults.

271. The Hairy Clerid.

Chariessa pilosa Forst.

The larvæ prey upon and do much toward preventing the increase of several of the destructive flat-headed borers (*Buprestidæ*) in deciduous trees.
EXHIBIT: Adults.

THE CLICK BEETLES. FAMILY ELATERIDÆ.

272. The Eyed Elater.

Alaus oculatus Linn.

As a larva preys upon numerous species of bark and wood boring insects in deciduous trees.
EXHIBIT: Adults.

273. The Small-Eyed Elater.

Alaus myops Fab.

As a larva preys upon the larger species of borers in coniferous trees.
EXHIBIT: Adults, larva.

274. The Four-Winged Parasites.

Order *Hymenoptera*. Families *Ichneumonidæ, Braconidæ, Chalcididæ*, etc.

EXHIBIT: Two larval galleries of the rigid cypress borer (*Œme rigida*), in one of which the insect attained full development, while in the other it was attacked and killed by a parasite, *Bracon* sp.
Adults and cocoons of several species which attack larvæ of butterflies and moths.
Adults and cocoons of several species which attack larvæ of wood-boring insects.

THE TROGOSITIDS. FAMILY TROGOSITIDÆ.

275. The Green Trogositid.

Trogosita virescens Fab.

A very important enemy of nearly all the larger and more destructive bark-beetles. The adults conceal themselves in the outer bark, and the larvæ enter the galleries and prey upon the insects therein.
EXHIBIT: Adults.

THE COLYDIIDS. FAMILY COLYDIIDÆ.

276. The Tuberculate Colydiid.

Aulonium tuberculatum Lec.

The adults enter the galleries and with the larvæ feed upon various species of bark-beetles in all their stages.
EXHIBIT: Adults.

277. The Line-Marked Colydiid.

Colydium lineola Say.

The adults enter the galleries and their larvæ feed upon the developing brood of various species of Ambrosia beetles.
EXHIBIT: Adults.

SPECIAL EXHIBITS.

ENLARGED MODELS OF INSECTS, AND OF INSECTS AND INJURED PLANTS.

MALARIA MOSQUITO.

Anopheles maculipennis Meig.

Enlarged model. This and other species of Anopheles are the only known transmitters of human malaria. The parasitic organism causing malaria inhabits the red-blood cells of human beings. It is taken with the blood into the stomach of the mosquito. There it undergoes a sexual development, reproduces, and the offspring are carried with the mosquito poison into the circulation of healthy human beings.

YELLOW FEVER MOSQUITO.

Stegomyia fasciata Fab.

Enlarged model. This mosquito transmits yellow fever, and it is now the opinion of the best-posted experts that only through its bite can one contract this disease.

SALT MARSH MOSQUITO.

Culex sollicitans Walk.

Enlarged model. This mosquito is not known to carry any disease, but is very annoying at many seaside resorts.

THE HOUSE FLY.

Musca domestica Linn.

Enlarged model. The house fly is not merely a nuisance, but also acts as a carrier of many diseases, especially of typhoid fever in the United States.

HESSIAN FLY.

Mayetiola destructor Say.

One of the most injurious enemies of wheat in the northern and central States. The larva attacks the stem. The average yearly damage to the wheat industry in this country from this insect is $60,000,000.

Enlarged models of the adult fly, and of an infested stalk of wheat showing the puparium or so-called "flaxseed," which encloses the pupa stage of the insect.

Two natural-size models, one representing a healthy, unaffected young wheat plant to contrast with the same attacked by the Hessian fly; the other illustrating the effects of the attacks of the Hessian fly.

THE SILKWORM.

Bombyx (*Sericaria*) *mori* Linn.

Enlarged model of the larva, showing its complete anatomy; the muscles, nerves, tracheæ, viscera, the silk apparatus in its whole extent, the silk-secreting gland, and the gland discovered by Auzoux, which secretes a liquid the use of which is most probably to convert the silky matter into insoluble threads. In one of the prolegs may be seen the muscles which move the claws and sucking disks which enable the animal to walk with its true feet in the air.

Enlarged models of the moths, male and female. In each model is shown the atrophy of the digestive tube and the development of the marvelous organs by which the species is perpetuated. (After Auzoux.)

HOP APHIS.

Phorodon humuli Schr.

Unaffected Hop Plant.—A spray of hops, modeled in wax, representing the plant as it appears in vigorous growing condition and free from the attacks of its principal enemy, the hop aphis. This is to call attention to the stronger foliage and the more abundant and larger hops produced by plants from which the hop aphis has been eradicated by the use of proper remedies.

Affected Hop Plant.—A spray of hops, modeled in wax, representing the vine as it appears when attacked by the hop aphis, showing the blackening and discoloration of the leaves and the small and inferior hops, which are also discolored and otherwise unsuitable for market.

Winter Eggs.—Enlarged model of the winter eggs, which are attached by the sexual female to the terminal twigs of the plum, in crevices around the buds.

Stem-Mother.—The stout female aphis shown in this enlarged model hatches from the winter egg and is characterized by shorter legs and honey-tubes. It gives birth, without the intervention of the male, to living young, of which three generations are produced on the plum trees, the last being winged and migrating to the hop.

Winged Migrant.—This enlarged model represents the first winged generation, the third produced on the plum. It instinctively flies to the hop plant and is the progenitor of from five to twelve wingless generations of virgin females, which infest the hop plants until autumn and are the sole forms which depredate on the hop. In autumn the last generation again produces winged females which fly to the plum trees.

Hop-Affecting Stage.—This enlarged model represents the structure and appearance of the five to twelve wingless generations of virgin females which people the hop plant until autumn. These are the progeny of the *winged migrants* and are the sole forms which injure the hop.

Return Migrant.—This enlarged model represents the last generation produced on the hop, the winged migrant form which in September returns again to the plum and gives birth to three or more young, which are the true sexual females, the first perfect sexual females produced in the cycle up to this point.

Pupa of Return Migrant.—This model represents the pupal stage of the *return migrant*. The striking features are the wing pads, which with another molt become the ample flight organs seen in the model of the adult.

True Sexual Female.—This enlarged model represents the generation born of the return migrant, which never acquire wings and never leave the plum tree. Maturing in a few days, according to the temperature, they are fertilized by the true winged males which have been subsequently developed on the hops and have come from the hop fields to the plum. Shortly after fertilization the winter eggs, like those with which the cycle started, are deposited.

Young Sexual Female.—This enlarged model represents the newly hatched stage of the only perfectly developed sexual female produced in the life cycle of this insect.

Winged Male.—This enlarged model represents the first and only male generation produced in the life cycle of the hop aphis. This is developed in the autumn and flies from the hop to the plum and fertilizes the true sexual females.

CHINCH BUG.

Blissus leucopterus Say.

The Eggs.—This enlarged model represents the form of the egg and the terminal cap. The eggs are three-hundredths of an inch long, the top being squarely docked and surrounded by four round tubercles near the center. Color from pale whitish to amber.

First Larval Stage.—This stage, represented enlarged in this model, differs from the adult in being more elongate and in having two-jointed tarsi, the head broader and more rounded and the joints of the body subequal. The prevailing color of the whole body is red.

Second Larval Stage.—After the first molt the form represented in this enlarged model is assumed. The red becomes a brilliant vermilion and contrasts with the pale band across the middle of the body, while the head and prothorax are dusky and coriaceous. Two broad marks appear on the mesothorax and the second, fourth, and fifth abdominal sutures, and one at the tip of the abdomen.

Pupa.—The pupa shown in this enlarged model approaches still more nearly the form of the adult, and is not unlike the last larval stage except in being darker and in the appearance of wing pads, which extend almost across the pale basal abdominal joints.

THE IMAGO.—The mature insect which is represented enlarged in this model is elongate, blackish, and with numerous hairs, or pubescence. Its length is about three-twentieths of an inch. The outer wings are whitish, with a strong distinctive black spot.

THE SAN JOSE SCALE.

Aspidiotus perniciosus Comst.

Ten enlarged models are exhibited illustrating the life cycle of this pest, which has caused more damage to the fruit industry and been the object of more legislation than any other insect. Its small size and inconspicuous appearance often leave it undetected until the infested trees are beyond recovery. The scale may be killed by fumigation or spraying.

Enlarged models are exhibited of the *first* and *second larval stages*, of the *young crawling larva*, *nearly full-grown larva*, *male pro-pupa*, *male pupa*, *adult male*, *adult female*, and of the *half-grown scale*, *full-grown male scale*, and *full-grown female scale*.

THE ASIATIC LADYBIRD.

Chilocorus similis Rossi.

Two enlarged models are exhibited illustrating the adult and the larva of this insect, which was introduced by the U. S. Department of Agriculture from China, where it is the important agent in keeping the San José scale in check.

THE CODLING MOTH.

Carpocapsa pomonella Linn.

Four enlarged models illustrating the life history of this insect, which is the cause of the "wormy apples." The damage from it in this country is estimated at $11,000,000 annually.

Models are exhibited of the *larva* and of the *adult moth;* and also an enlarged section of a *piece of bark*, cut so as to show a cocoon and pupa of the codling moth beneath it, and an enlarged section of "wormy" apple showing egg, young and mature larva and their work.

THE MEXICAN COTTON BOLL WEEVIL.

Anthonomus grandis Boh.

Enlarged model. This insect is a native of Cuba and Mexico; upwards of ten years ago the weevils crossed the Rio Grande near Brownsville and have now spread over nearly the entire cotton belt of Texas and into the western parishes of Louisiana. Its rapid extension, great destructiveness, and the unusual difficulties in the way of its control have caused grave fears for the future of the cotton industry in the United States. The Federal Government last year appropriated $250 000 for combating this insect.

THE HONEY BEE.

Apis mellifera Linn.

Enlarged models, showing the insect in six different forms—queen, male, wax-worker, worker, bee with propolis, and the bee with pollen. In these are shown the external and internal characters which distinguish each type. Also a model of a comb in the same proportion, in which are seen the cells for honey, for pollen, and for the eggs to produce queens, drones, and workers, with eggs, larvæ, and pupæ in different stages of development. (After Auzoux.)

FLUTED SCALE.

Icerya purchasi Mask.

Model in wax of a twig of orange infested with the fluted scale (*Icerya purchasi*) copied directly from nature, the actual scales being transferred to the model plant. Illustrates the characteristic appearance of the infested plant.

MODEL OF NONINFESTED ORANGE.—The model in wax contrasts with the one representing the characteristic appearance of infested plant.

Illustrations from the publications of the Division of Entomology, representing the different stages of the fluted scale and its principal enemies.

AUSTRALIAN LADYBIRD.

Novius (*Vedalia*) *cardinalis* Muls.

(Principal enemy of the fluted scale [*Icerya purchasi*].)
Enlarged model of the adult of this insect, the introduction of which from Australia has effected what was impossible by any other means—the practical annihilation of the fluted scale in California.
Enlarged models showing structure and characteristic appearance of the larva and and pupa.

THE "KISSING BUG."

Reduvius personatus Linn.

Enlarged model of one of the group of true bugs, generally known as "assassin bugs," which of late years have acquired a certain newspaper notoriety through their supposed preference for the human lips.
They feed on other insects, which they pierce with their strong beaks; some species are frequently found in houses, attracted by light, and they may, if they believe themselves in danger, accidentally or in defense, pierce the human skin with their beaks, causing a painful wound, and often blood poisoning through the introduction of the germs of putrefaction.

ORANGE RUST-MITE.

Eriophyes (*Phytoptus*) *oleivorus* Ashm.

Wax models of oranges showing work of the orange rust-mite.

ENLARGED MODELS OF THE PARASITE CAUSING MALARIA (ÆSTIVO-AUTUMNAL FEVER).

Plasmodium malariæ.

Twenty-nine enlarged models, illustrating the life history of this parasite in the blood of man and in the mosquito (*Anopheles*).
The models exhibited show: Development of spores in the blood of man; development of "crescent" in the blood of man; development of "gamete" in stomach of mosquito; development and fertilization of "zygote" in stomach of mosquito; development of "zygote" in stomach wall of mosquito; "zygote" filled with "blasts" and ready to burst; free endospores, free blasts, and spermatozoa.

PHOTOGRAPHS OF INSECT DAMAGE TO FORESTS.

Western yellow pine trees killed by the pine-destroying beetle. Black Hills, South Dakota.
Section of shortleaf pine tree killed by the destructive pine bark-beetle. North Carolina.
Trunk of western yellow pine killed by the Arizona Dendroctonus, showing work of beetles. New Mexico.
Western yellow pine tree, showing injury caused by the dark-red turpentine beetle at base. New Mexico.
Monterey pine tree, showing injury of the dark-red turpentine beetle at base. California.
Western hemlock trees killed in 1892 by the hemlock span-worm. State of Washington.
Trunk of hickory tree killed by the hickory bark-beetle, showing growth of white fungus following attack. Detroit, Mich.
Silver pine trees killed by the mountain-pine Dendroctonus. Priest River Forest Reserve, Idaho. (2.)
Bark from trunk of giant arborvitæ, showing mines of the cedar bark-beetle. State of Washington.
Log of Douglas spruce, showing galleries of the Douglas spruce Dendroctonus. State of Washington.
Storm-felled Douglas spruce offering favorable conditions for the propagation of the Douglas spruce Dendroctonus and other bark-bettles. State of Washington.

Bark from storm-felled log of Douglas spruce, showing galleries of the Douglas spruce Dendroctonus. State of Washington.

Group of longleaf pine killed by so-called "worm deadening." Eastern Texas.

Young Sitka spruce, showing top killed by western spruce-weevil. State of Washington.

Cottonwood tree killed by the bronzed Agrilus, showing the galleries of larvæ in trunk. Priest River Forest Reserve, Idaho.

Young chestnut killed by the two-lined chesnut borer. Western North Carolina.

Large chestnut, the death of which was hastened by insect injury. Western North Carolina.

Girdled bald cypress tree injured by timber beetles. South Carolina.

Trunk of hickory killed by hickory bark-beetle, showing galleries on surface of wood. Western North Carolina.

LIVING INSECTS.

By means of aquaria, vivaria, and other forms of insect cages, living insects will be on exhibit, subsisting on their natural food and undergoing their usual transformations.

In the aquaria, stages of some of the species of mosquitoes occurring on the Pacific coast will be shown, as also aquatic beetles and bugs and the aquatic larvæ of various insects which are terrestrial in the adult state.

INDEX TO SYSTEMATIC NAMES.[a]

	Page.
abbotii (Lophyrus)	89
abbotii (Sphecodina)	23
abbreviatus	54
abdominalis	99
Acanthia=Clinocoris	67
Acanthocinus	93
achatina	87
achemon	22
Acleris	15
acræa	30, 49, 52
Acridium=Schistocerca	32
Acronycta=Apatela	26, 27, 35, 86
aculeatus	75
aculiferus	94
Adalia	17, 41
adonidis	53
advena	61
Ægeria	25, 28
Ægeria (*see* Melittia)	59
æqualis	39
ærata	27
æreum	94
affinis	7
Agallia	45
agassizii	28
Agrilus	21, 26, 77, 97
Agromyza	57
Agrotis	51
Alaus	102
albicornis	99
albida (Macrobasis)	55
albida (Syneta)	17
albifrons	87
albilinea	39
albionica	53
Aleyrodes	9, 32
Allorhina	18
Alphitobius	63
Alsophila	16
alternatus	64
Alypia	23
americana (Apatela)	86
americana (Cimbex)	89
americana (Harrisina)	23
americana (Malacosoma)	15, 88
americana (Meromyza)	31, 41
americana (Periplaneta)	64
americana (Schistocerca)	32
americanus (Syrphus)	40
americanus (Tabanus)	68
amethystinus	77
Ampelophaga	23
ampelophila	65, 66
Amphicerus	13, 22
Amphisa=Coelostathma	34
amyntor	84
Anabrus	39
Anaphora	34
Anarsia	19
Anasa	60
Anatis	17, 40
anchorago	58
Ancylis	15, 26, 27
ancylus	14, 19, 28
andreæ	94
Angerona=Xanthotype	29
angusii	86
angustatus	45
Anisomorpha	9
Anisopteryx=Alsophila	16
Anisota	85
annexa	29, 51
annularis	42
annulata	54
annulatus	66
annulipes	18
Anobium (*see* Sitodrepa)	62
Anomala	24
Anomalon	39
anonyma	39
Anopheles	65, 103, 106
antennata	18
antennatum	96
Anthomyia=Pegomya	53
Anthonomus	18, 21, 26, 42, 105
Anthrenus	62, 65
antiopa	83
antiqua	87
anxius	77, 97
aonidum	11
Apantesis	29, 36
Apatela	26, 27, 35, 86
Aphelinus	12
Aphis	10, 17, 53
Aphis=Macrosiphum, Siphocoryne	40
apicale	39
Apis	105
appendiculatus=Pristophora grossulariæ	29
apricans	97
Aræcerus	7
Aramigus	7
archippus	83
Archips	15, 34, 89
Archytas	42
Arctia=Apantesis	29
arcuata	25, 30
arenarius	45
argentata	85
argus	57
Arhopalus	95
Aristotelia	34
armiger=Heliothis obsoleta	42, 50, 57, 58
armigera	60
armoraciæ	53
Artipus	8
arvensis	40
Asemum	76, 93
asini	69
Asopia=Hypsopygia	37
Asopia=Pyralis	61
asparagi	58
aspericollis	75
Aspidiotus	11, 12, 13, 14, 19, 20, 21, 22, 28, 91, 105
Aspidiotus=Chrysomphalus	11
Aspidisca=Coptodisca	15
Aspidoglossa	21
Aspilates=Catopyrrha	35
assimilis	43
atlanis	30, 37, 38, 43, 58
atomarium	94
atomus	82
atratus	68
atriventris	55
Atropos=Troctes	64
atropos	68
atrox	39
Attagenus	61
Aulonium	102
aurantii	11
aurichalcea=Coptocycla bicolor	55

[a] Many of the forest insects are species which have not yet been described. The reader will, therefore, find these under the generic name, or in the Index of Common Names.

	Page.
aurora	87
aurulenta	98
Automeris	16, 35
Autographa	36, 45, 52
avenæ	40
avulsus	100
Baccha	10
Balaninus	90
balsameus	81
barbata	46
barbatus	83
Basilarchia	83
basilare	22, 98
Basilona	85
beckii	11
Bembecia	26
bicaudatus	13, 22
bicolor (Coptocycla)	55
bicornis	31
bilineatus (Agrilus)	97
bilineatus (Telephorus)	18, 32
bimaculata	26
bimaculatus	8
binotatus	31
bipunctalis	53
bipunctata	17, 41
biselliella	65
biustus	8
bivittata	56
bivittatus (Melanoplus)	31, 37, 43, 58
bivittatus (Trypodendron)	71
bivulnerus	55
blanda	46, 48
Blatta	64, 67
Blattella	64
Blennocampa	23
Blissus	40, 45, 104
Boarmia=Ectropis	34
Boarmia=Cleora	59
Bombyx	103
Boophilus	66
borealis (Epilachna)	60
borealis (Gryllotalpa)	9
Botis=Pachyzancla	53
botrana	24
bovis	69
Brachinus	55
Brachytarsus	64
Bracon	82
Braconidæ	102
brassicæ (Aphis)	53
brassicæ (Autographa)	36, 45, 52
brassicæ (*Oscinis*)=Scaptomyza graminum	54
brassicæ (Pegomya)	53
bredowii	84
brevicomis	74
brevis	66
Bruchophagus	32, 38
Bruchus	49, 50
brunnea	24, 33, 46
brunneum	95
brunneus	62
Bryobia	32
bubalus	13
Bucculatrix	15
bullatus	45
Buprestid (in Abies)	83
Buprestidæ	102
Buprestis	97, 98
buprestoides	9
Cacœcia=Archips	15, 34, 89
cæsar	66
cæsonia	36
cahiritella=Ephestia cautella	60
Calandra	63
calcarata	93
calcitrans	66, 68
californica (Malacosoma)	88
californica (Phryganidia)	86
californica (Tetranychoides)	9
californicus	9
caliginosus	21, 55
Callidium	94, 96
Callidryas	37
Callimorpha=Haploa	19
Calocalpe	88
Calocoris	25
Calosoma	42
Calyptus	26
Cambala	54
caminea=Cerotoma trifurcata	48
Camnula	39
canadensis	96
Canarsia	15
candida	12
canellus	25
canis	67, 69
Cantharis	39, 47, 48
capitata	19
capitis	67
capræa	95
cara	86
Caradrina	44
carbonaria	41
cardinalis	106
cariniceps	80
carinulatus	72
Carnegiea=Euxoa	17, 35
carolina (Dissosteira)	31, 43
carolina (*Protoparce*)=Phlegethontius sexta	57
Carphoborus	73
Carpocapsa	18, 105
Carpophilus	62
caryæ (Balaninus)	90
caryæ (Halisidota)	85
caryana	90
casei	65
Cassida	54, 56
cassidea=Chelymorpha argus	57
catalpæ	84
Cathartus	61
Catocala	86
Catolaccus	26
Catopsilia=Callidryas	37
Catopyrrha	35
Caulophilus	63
cautella	60
cavicollis	20
Cecidomyia=Dasyneura, Mayetiola	33, 38, 41
Cecidomyiid (Pine twig maggot)	78
cecropia	17
Celatoria	33, 46
celeus (*Protoparce*)=Phlegethontius quinquemaculata	57
celsus	98
celtis	84
centerensis	99
Centrinus	46
Cephus	40
cerasi=Eriocampoides limacina	20
Ceratitis	19
Ceratographis	93
Ceratomia	84
cerealella	61
cerealis	39
cereralis=Loxostege commixtalis	31
Ceresa	13
cerogama	86
Ceroplastes	10
Cerotoma	48
cervicalis	12
ceto (Melittia)=satyriniformis	59
Ceutorhynchus	54
Chætocnema	47, 56
Chalcidid (causing bird's-eye pine)	77
Chalcididæ	102
Chalcophora	98
chalybea	23
Chariessa	102
Chauliognathus	18, 21
Cheiropachys	19
Chelymorpha	57
Chermes	79
Chilocorus	12, 55, 105
chinensis	50
Chion	94
Chionaspis	11, 14, 21
Chloripe	84
Chlorops	41, 43
Chrysobothris	7, 12, 97
chrysœla	7
Chrysomphalus	11
Chrysomyia	66, 69
Chrysopa	10, 41

Page

Chrysophanus=Heodes 36
Chrysops 68
chrysorrhœa 17, 87
Cicada 79
Cicadula 40
Cimbex 89
Cimex=Clinocoris 67
cinctus (Chion) 94
cinctus (Tabanus) 68
cinerea (Epicauta) 47, 55
cinerea (Hetœmis) 94
cinereola 49
cingulata (Oncideres) 92
cingulata (Phlegethontius)=convolvuli 56
cingulata (Rhagoletis) 20
cinnamopterum 83, 96
cirripediformis 10
Citheronia 85
citri (Aleyrodes) 9
citri (Chionaspis) 11
citri (Pseudococcus) 10
citricola (*Mytilaspis*)=Lepidosaphes beckii 11
clandestina 52
claripennis 44
clavata 10
Cleora 59
Cleora=Ectropis 34
Clerus 101
Clinocoris 67
Clisiocampa=Malacosoma 15, 87, 88
c-nigrum 30
Coccinella 17, 40, 55
Coccotorus=Anthonomus 21
Coccus 10
Cochlidiidæ 89
Cœlostathma 34
Colaspis 24, 33, 46
Coleophora 15
Colias=Eurymus, Zerene 36, 37
Collops 32
colon 19
colonus 96
columba 99
Colydium 102
comes 24
comma 42
commelinæ 57
commixtalis 31
compositus 7
Compsomyia=Chrysomyia 66, 69
comptana 26, 27
comyntas 36
concinnus 73
concolor 93
concumbens 86
confederata 8
confinis (Chætocnema) 56
confinis (Pityophthorus) 71
confusor 92
confusum 63
confusus 73
coniferarum 84
Conorhinus 67
Conotrachelus 18, 21, 90
conquisitor 15, 18
consputa 46
constricta 88
convergens 17, 55
convexior 46
convolvuli 56
Copidryas 44
Coptocycla 55, 56
Coptodisca 15
Corimelæna 27
cornutus 63
corrupta 48
corvina 55
coryli 90
Corynetes=Necrobia 65
Cossus 99
costalis (Hypsopygia) 37
costalis (Tabanus) 68
Cotalpa 89
Crambus 30
Craponius 24
crenicollis 46
Crepidodera 17
crepuscularia 34

Page.

cresphontes=Papilio thoas 8
Cressonia 84
Crioceris 58
crispata 88
crocataria 29
cruciferarum=Plutella maculipennis 52
Cryphalus 71, 79
Cryptocephalus 27
Cryptorhynchus 92
Crypturgus 82
Ctenocephalus 67, 69
cucumeris 47, 56, 60
cucurbitæ (*Ægeria*)=Melittia satyriniformis 59
Culex 67, 103
Culex=Stegomyia 65
cunea 16, 27
Cupressæ 100
Curculionid (Douglas spruce twig-weevil) 78
Curculionid (Pine fungus-gall weevil) 78
curculionis 21
Curius 95
cyaneus 99
cyanipennis 94
Cylas 56
cylindrica 40
Cyllene 93, 94
Cymatophora 28
Cymatophora=Ectropis 34

Dactylopius=Pseudococcus 10
Dasyneura 33, 38
dasystomus 95
Datana 86
decemlineata 55
decemnotata 18
Deilephila 44
delphinii 89
Dendroctonus 74, 82, 100, 101
dentatus (Curius) 95
dentatus (Phlœosinus) 81
denticulata 47
dentipes 97
Dermestes 65
Desmia 23
destructor 47, 103
destructor (*Dactylopius*)=Pseudococcus citri 10
devastatrix 52
Diabrotica 33, 46, 48, 58, 59, 60
diabroticæ 33, 46
Diacrisia 49
Diaphania 59
Diapheromera 89
diaspidis 12
Diastrophus 26
Dicerca 97
Dichelia=Epagoge 34, 59
Dictyophorus 9
didactylus 54
Diedrocephalus 40
differentialis 31, 38, 43
dimidiatus 62
Dinoderus 63
Dioryctria 90
Diplotaxis 25
discoidea 94
discopunctana 34
Disonycha 46, 47
dispar (Porthetria) 17, 87
dispar=Xyleborus pyri 13, 20
dissimilaria 35
Dissosteira 31, 43
disstria 87
distans 7
divinatoria 64
Dolerus 40
Dolurgus 73
domestica (Lepisma) 64
domestica (Musca) 66, 103
domesticus (Gryllus) 64
dorsalis 48
Doryphora=Leptinotarsa 55
Drasteria 29, 34
Drosophila 65, 66
drummondi 77, 97
Dryocampa (*see* Anisota) 85
Dryocœtes 80, 81
Dryophilus 78
dubius (Pissodes) 92

Page.

dubius (Thanasimus) 101
duodecimpunctata (Crioceris) 58
duodecimpunctata (Diabrotica) ... 33, 46, 48, 58, 60
Dynastes 89
Dysdercus 9

Eburia 96
Echocerus 63
Ectobia=Blatella 64
Ectropis 34
Edema (*see* Symmerista) 87
editha 36
edusa 29
Elaphidion 8, 13, 91
Elasmopalpus 48
elongatus 55
Emblethis 45
Empretia=Sibine 8
Enarmonia 38
Ennomos 16
Entomoscelis 53
Epagoge 34, 59
Epargyreus 84
ephemeræformis 8, 16
Ephestia 60
Ephestia=Plodia 61
Epicærus 17, 33, 45, 48
Epicauta 47, 55, 56
Epilachna 48, 60
Epitragus 7
Epitrix 47, 52, 56, 60
equi 69
Erannis 16
erechtea 29, 31
Ergates 77, 92
erichsonii 89
Eriocampa=Eriocampoides 20
Eriocampoides 20
Eriophyes 9, 20, 106
eruditus (*Hypothenemus*) = Stephanoderes hispidulus 7
erythrocephalus 96
Erythroneura=Typhlocyba 24
Estigmene 30, 49, 52
eubule 37
Euclea 89
Eudamus 49
Eudamus=Epargyreus 84
Eudamus=Thorybes 36
Eudemis=Polychrosis 24
Eudioptis=Diaphania 59
Eudocimus 92
Eudryas=Euthisanotia 23
Eufitchia=Cymatophora 28
Eulecanium 19, 28
Eulia 34, 59
Euphoria 18
Euphorocera 44
Euproctis 17, 87
Eupsalis 98
Eurema 37
Eurycyttarus 8
Eurymus 36, 37
erysternus 69
eurytheme 36
Euschausia 85
Euschistus 9
euterpe 37
Euthisanotia 23
Euthoctha 9, 27, 45
Euvanessa 83
Euxoa 17, 35
Everes 36
Evergestis 52
Evoxysoma 24
Exartema 25, 27
exigua 44
exitiosa (Cicadula) 40
exitiosa (Sanninoidea) 19
extensicornis 40
exul 68

farcta 30, 49
farinalis 37, 61
fasciata 65, 103
fasciatum 12
fasciatus 96

Page.

fasciculatus 7
Feltia 29, 49, 51
femorata (Chrysobothris) 12, 97
femorata (Diapheromera) 89
femur-rubrum 38, 43, 58
ferrugineum 63
fervidana 89
ficus 11
Fidia 22
flavedana 34
flavescens 33
flaviceps 40
flavimaculata (*Laphygma*)=Caradrina exigua 44
flavipennis 99
flavipes (Hippelates) 66
flavipes (Leucotermes) 64
floridanus 8
floridensis 10
forbesi 14, 21
forceps 64
formicarius (Cylas) 56
formicarius (Thanasimus) 101
fragariæ 24
fragilis 88
frenchii 43
frigida 30
frondicola 25
frontalis 100, 101
Frontina 43
frugiperda 30, 31, 34, 39, 44, 52
fulleri 7
fulminans 95
fulvoguttata 97
fumata 61
funebris 32, 38
funeralis 23
fur 62
furcata 66
furfura 14, 21
fusca 30, 46
fuscula 52, 56

galeator 9, 27, 45
Galerucella 20, 90
Gastrophilus 69
Gaurotes 94
Gelechia=Aristotelia, Phthorimæa, Sitotroga 34, 54, 61
gemellatus 61
Geocoris 45
germanica 64
gibbosa (Lachnosterna) 33, 46
gibbosa (Nadata) 87
glacialis 55
glaucaria=Synchlora ærata 27
gloveri (Copidryas) 44
gloveri (Lepidosaphes) 11
Gnathotrichus 70
Goes 94
Gortyna 42
Gortyna=Papaipema 39, 54, 57
gossypii 10
graminum 54
granaria (Calandra) 63
granaria (Macrosiphum) 40
grande 41
grandis (Anthonomus) 42, 105
grandis (Lebia) 55
granella 60
granulatus 75
Graphisurus (*see* Ceratographis) 93
Grapholitha 90
Grapholitha=Enarmonia 38
Graphops 25
Graphorhinus 33
Grapta=Polygonia 29, 42, 83
grata 23
grataria 35
grossulariæ (Pristiphora) 29
grossulariæ (Zophodia) 29
grotei 18
Gryllotalpa 9
Gryllus 64
guttata=Coptocycla signifera 56
Gymnonychus appendiculatus (*see* Pristiphora grossulariæ) 29

	Page.
Hadena	52
Hadronema	45
Hæmatobia	69
Hæmatopinus	69
Hæmatopsis	35
Halisidota	85
(*See also* Euschausia.)	
Haltica	23, 25
Halticus	45, 49
hammondi	15
Haploa	19
Harmonia	17
Harpalus	21, 55
Harpiphorus	25
Harrisina	23
hederæ	11
Heliophila	29, 35, 39, 43
Heliothis	42, 50, 57, 58
Hellula	54
Hemerobius	10
Hemerocampa	16, 87
Hemileuca	85
hemisphærica	10
Heodes	36
hesperidum	10
Hetœmis	94
Hibernia=Erannis	16
hilaris (Chrysops)	68
hilaris (Nezara)	9, 55
Hippelates	66
Hippodamia	17, 40, 55
hirtifrons	41
hispidulus	7, 13
histrionica	52
Homalomyia	66
Homoptera	29, 86
hopkinsi	99
hordei	41
humuli (Hypena)	42
humuli (Phorodon)	21, 41, 104
hyalinata	59
Hydrœcia=Papaipema	54
Hylastes=Hylastinus	32
Hylastinus	32
Hylesinus	75
Hylobius	92
Hyloicus=Sphinx	84
Hylotrupes	77, 83, 96
Hylurgops	74
Hyparpax	87
Hypena	42
Hypena=Plathypena	35
Hyperchiria=Automeris	16, 35
Hyphantria	16, 27, 86
Hypoderma	69
Hypophlæas	36
Hypostena	46
Hypothenemus=Stephanoderes	13
Hypsopygia	37
Icerya	10, 105, 106
Ichneumon	15
ichneumoneus	101
Ichneumonidæ	102
Ichthyura (*see* Melalopha)	86
ignita	25
imbricatus	17, 33, 45, 48
imbricornis	21
immanis	42
imperialis	85
inæqualis	24
incertus	26
inclusa	86
inda	18
indeterminа	89
indiginella	15
inerme	8
inguinalis	67
innumerabilis	22, 91
instrutana	37
integer	73
integerrima	86
interpunctella	61
interrogationis	42, 83
interstinctana	38
io	16, 35
irritans	67
isabella	30, 36, 44
Isia	30, 36, 44
Isosoma	24, 41
Ithycerus	13
juglandis (Conotrachelus)	90
juglandis (Cressonia)	84
juncta	55
kalmiæ (Sphinx)	84
kansanus	55
kirschii	61
Klinophilos=Clinocoris	67
kuchniella	60
Lachnosterna	25, 30, 33, 46, 49
Læmophlœus	61
lætus	15
Lagoa	88
Lampronotus	30
Languria	32
lanigera (Cotalpa)	89
lanigera (Schizoneura)	12
Lapara	84
Laphygma	30, 31, 34, 39, 44, 52
lapponica	90
lardarius	65
Lasioderma	63
laticinerea	18
laticollis	95
latidens	72
latinasus	63
latipennis	22
laurifolium	89
Lebia	55
Lecanium	91
Lecanium=Coccus	10
Lecanium=Eulecanium	19, 28
Lecanium=Saissetia	10, 11, 14
lecontei	19
lectularia	67
legitima	59
leguminicola	38
Lema	55
Lemonias	36
lentis	50
Lepidosaphes	11, 14
Lepisma	64
Leptinotarsa	55
Leptoglossus	9, 59
Leptostylus	8, 94
Leptura	96
Leptus	67
Leucania=Heliophila	29, 35, 39, 43
Leucarctia=Estigmene	30, 49, 52
leucopterus	40, 45, 104
leucostigma	16, 87
Leucotermes	64
ligneus	83, 96
lignosellus	48
limacina	20
Limacodes=Prolimacodes	8
Limenitis	84
liminaris	19
Limneria	45
Lina (*see* Melasoma)	90
lineata (Deilephila)	44
lineata (Hypoderma)	69
lineatella	19
lineatum	96
lineatus	33
lineola (Colydium)	102
lineola (Tabanus)	68
lisa (*Terias*)=Eureme euterpe	37
Lita=Phthorimæa	54
longicornis	33
longipes	22
longispinus	10
Lophoderus=Eulia	34, 59
Lophyrus	89
Lopidea	57
Loxostege	31, 34, 44, 51
Lucilia	66
Lugubre	42
lunata	86
lunator	100
luteola	90

Page.

Lycæna=Everes 36
Lyctus 98
Lygus 33, 45, 52
Lymexylon 98
Lysiphlebus 40

macellaria 66, 69
Macrobasis 33, 47, 48, 55
Macrosila=Phlegethontius 56
Macrosiphum 37, 39, 40
maculata (Epicauta) 47, 56
maculata (Halisidota) 85
maculata (Megilla) 55
maculatus (Harpiphorus) 25
maculipennis (Anopheles) 55, 103
maculipennis (Plutella) 52
maia 85
Malacosoma 15, 87, 88
malariæ 106
malefida 51
mali (Aphelinus) 12
mali (*see* Aphis pomi) 17
mali (Pterocyclon) 12
malifoliella 16
malivarella 15
Mallodon 95
Mamestra 35, 36, 44, 51, 53, 58, 59
mannerheimii 92
Margaronia=Diaphania 59
marginata (Bembecia) 26
marumba 84
Marylandicus (*Nematus*) = Pachynematus extensicornis 40
Materiarius 70
mauritanicus 62
maxillosus 63
Mayetiola 41, 103
media 57
Megalopyge 8
Megilla 55
Melalopha 86
Melanophila 77, 97
Melanoplus 30, 32, 37, 38, 39, 43, 58
melanopus 95
Melasoma 90
melinus 50
Melitæa=Lemonias 36
Melittia 59
mellifera 105
Melophagus 69
Memythrus 21
menapia 84
mercator 61
meridionale 68
Meromyza 31, 41
messoria 35
mexicanus 68
micans 66
Microcentrum 9, 89
militaris 45
Mineola 15
minians 36
ministra 86
minuta (Acleris) 15
minuta (Eupsalis) 98
minutissimus 80
misella 12
modesta 84
moestum 93
molitor 62
mollipes 40
Monarthrum=Pterocyclon 12
Monocesta 90
Monocrepidius 46
monodactylus 56
Monohammus 76, 92
Monomorium 65
Monophadnoides 27
Monophadnus=Monophadnoides 27
Monoptilota 47
Monoxia 46
monuste 51
Morellia 66
mori 103
mozardi 32
Murgantia 52
Musca 66, 103
myops 102

Page.

myron 23
mytilaspidis 8
Mytilaspis=Lepidosaphes 11, 14

Nadata 87
nais 29, 36
nasalis 69
nasicus 90
nebulosus=Diastrophus turgidus 26
nebulosus (Graphops) 25
nebulosus (Hylesinus) 75
nebulosus (Sphragisticus) 45
Necrobia 65
Nectarophora=Macrosiphum 40
Nematus 89
Nematus=Pteronus, Pachynematus 29, 40
nenuphar 18, 21
Neoclytus 95, 96
Neophasia 84
Nephelodes 36
nerii=Aspidiotus hederæ 11
Nezara 9, 55
nicippe 37
nigricana 50
nigripes 56
nigrofasciatum 28
nigrovittatus 68
nitela 39, 54, 57
nitens 66
nitida 18
nitidalis 59
nitidulus 72
nitidum 76
niveus 22, 26
Noctua 30, 52
Nodonota 25
nodosus 93
Notolophus 87
noveboracensis 13
novemnotata 17, 55
Novius 106
nubeculana 15
nubilella 47
nubilis 82
nuttalli 39, 47, 48
Nysius 45

Oberea 26
oblinita 26, 27, 35, 86
obscura (Catocala) 86
obscura (Dicerca) 97
obscura (Heliothis), erroneously used for H. obsoleta 42
obscurus (Tenebrio) 62
obsoleta 42, 50, 57, 58
obsoletus 93
obtectus 49
occidentalis (Cephus) 40
occidentalis (Marumba) 84
ocellana 15
ochreus (Sphenophorus)= æqualis 39
Oceneria=Porthetria 17
octomaculata 23
oculatus 102
Odontota 48
Œcanthus 22, 26
Œme 95, 102
Œstrus 69
Ogdoconta 49
oleæ 11, 14
oleivorus 9, 106
Olene 87
oleracea 51
Olethreutes 37
Oncideres 92
Oncognathus 31
Oncometopia 24
opercularis 8
operculella 54
Ophion 44
oppositus 59
Orchestes 17
oregoni 73, 100
Orgyia. (*See* Notolophus and Hemerocampa.)
orientalis 64, 67
Ormyrus 77
Orthosoma 95

	Page.
Oscinis	41
Oscinis=Scaptomyza	54
ostreæformis	14
Otiorhynchus	24
ovatus	24
ovinus	69
ovis	69
Oxyptilus	23
Pachnæus	7
Pachylobius	92
Pachynematus	40
Pachysphinx=Marumba	84
Pachyzancla	53
Paleacrita	16, 88
pales	92
pallicornis	17
pallidula	54
pallipennis	62
pallipes	55
Palorus	63
pampinaria	59
panicea	62
Papaipema	39, 54, 57
Papilio	8
parenthesis	40
Parlatoria	12
parochus	92
parvulus	30
Pasimachus	55
Paururus	99
pectoralis	50
pecuarum	66, 68
Pediculus	67
Pegomya	43, 53
pellionella	64
pellucida	39
penicellus	46
pennsylvanica (Epicauta)	47, 55
pennsylvanicus (Chauliognathus)	18, 21
Penthina=Olethreutes	37
Pentilia	12
pergandei	12
Peridroma	31, 35, 42, 44, 51
Periplaneta	64
Periplaneta=Blatta	64, 67
periscelidactylus	23
permundana	25, 27
perniciosus	12, 13, 20, 28, 105
persicæ	19
personatus	106
Phanurus	68
pharaonis	65
Pharaxonotha	61
Philampelus=Pholus	22
philodice	37
Phlegethontius	56, 57
Phlœopthorus	19
Phlœosinus	73, 74, 81, 100, 101
Phlœotribus=Phlœopthorus	19
Pholus	22
Phorodon	21, 41, 104
Phoxopteris=Ancylis	26, 27
Phryganidia	86
Phthirius	67
phthorimæa	54
Phyllopus	9
Phyllotreta	53
Phylloxera	22
Phymatodes	95
Physocnemum	94
Physonota	57
Phytonomus	32
Phytoptus=Eriophyes	9, 106
piceæperda	82
piceus (Alphitobius)	63
piceus (Attagenus)	61
picivorus	92
picta (Cyllene)	94
picta (Harmonia)	17
picta (Mamestra)	36, 44, 53, 58
Pieris=Pontia	50, 51
piliventris	42
pilosa	102
Pimpla	15, 18
pinicola	99
Pionea=Evergestis	52
Piophila	65
pipiens	67
pisorum	49
Pissodes	78, 91, 92
Pityogenes	72, 80
Pityophthorus	71, 72, 80
Pityophthorus (*see* Pityogenes)	80
placidus	29
Plagionotus	93
Plasmodium	106
Plathypena	35
Platynota	8, 34
Platypus	7, 70
Plectrodera	95
Plodia	61
plorabunda	10
Plusia=Autographa	36, 52
Plutella	52
pluvialis	88
Podabrus	40
Podisus	29, 55, 58
Pœcilocapsus	33
Polistes	42, 55
polistiformis	21
Polychrosis	24
Polygonia	29, 42, 83
Polygraphus	81
polyphemus	84
Polyporus	82
pometaria	16
pomi	17
pomifoliella	15
pomonella (Carpocapsa)	18, 105
pomonella (Rhagoletis)	18
pomorum (*Mytilaspis*)=Lepidosaphes ulmi	14
ponderosæ	100
Pontia	50, 51
popeanella	34
Porthetria	17, 87
præceps	76
pratensis (Bryobia)	32
pratensis (Lygus)	33, 45, 52
Prionoxystus	99
Prionus	21, 95
Pristiphora	29
privatus	56
Proconia=Oncometopia	24
Procris=Harrisina	23
Prodenia	35, 57
progne	29
Prolimacodes	8
propinquus	58
proteus	49
protodice	51
Protoparce=Phlegethontius	57
proxima	41
prunicida=Anthonomus scutellaris	21
Psenocerus	28
Pseudococcus	10
Psocus=Troctes	64
Psyche=Eurycyttarus	8
Psylla	20
Psylliodes	46, 60
Pterocyclon	12
Pteronus	29
Pterophorus	56
Ptinid (Giant arborvitæ)	78
Ptinid (Pine wood-perforator)	78
Ptinus	62
pubescens=Xyleborus affinis	7
pubipennis	71
pulchra	94
Pulex=Ctenocephalus	67, 69
pulicaria	27
Pulvinaria	22, 91
pumilis	73
punctatus (Phlœosinus)	73
punctatus (Phytonomus)	32
puncticollis (Monoxia)	46
puncticollis (Nodonota)	25
puncticollis (Pityophthorus)	72
punctifer	68
punctulata	60
pungens (Culex)=C. pipiens	67
purchasi	10, 105, 106
purgatum	44
purpurascens	39
pusilla	53
pusillus (Ceratographis)	93

Page.

pusillus (Læmophlœus) 61
pygmæa 23
pylades 36
Pyralis 37, 61
Pyralis=Hypsopygia 37
pyri (Eriophyes) 20
pyri (Psylla) 20
pyri (Xyleborus) 13, 20
pyricola=Psylla pyri 20
Pyrina 98
Pyrrharctia=Isia 30, 36, 44

quadrigeminata 96
quadrigibbus 18
quadrimaculatus (Anopheles)=A. maculipennis 65
quadrimaculatus (Bruchus) 50
quadrimaculatus (Collops) 32
quadrimaculatus (Cryptocephalus) 27
quadrispinosus 101
quinquedecimpunctata 17, 40
quinquemaculata 57
quercus 90

rapæ (Ceutorhynchus) 54
rapæ (Pontia) 50
rapax 14
rapidus 25
ratzeburgi 63
Reduvius 106
regalis 85
reniculella 90
renigera 35
repetitalis (*Bolis*)=Pachyzancla bipunctalis 53
retecta 86
reticulatus 9
retinerve 9
Rhagium 96
Rhagoletis 18, 20
ribearia 28
ribesii 29
rigida 95, 102
rimosalis 52
robiniæ (Cyllene) 93
robiniæ (Prionoxystus) 99
Romaleum 94
rosaceana 15, 34
roseosuffusella 34
rostrana 8
rubi 27
rubicunda 85
rubiginosus 42
ruficollis 26
rufimanus 50
rufipennis 81
rufipes (Crepidodera) 17
rufipes (Necrobia) 65
rugipennis 74
rugulosus 13, 19, 20
rutilans 25

Sabulodes 88
Saissetia 10, 11, 14
Samia 17
Samia=Callosamia, Philosamia.
sanguinea 17, 40, 55
sanguinolenta 45
sanguisuga 67
Sannina=Sanninoidea. 19
Sanninoidea 19
Saperda 12, 83, 93, 94
satyriniformis 59
saucia 31, 35, 42, 44, 51
saxeseni 13, 71
sayi 42
scabra 35
scalaris 69
scalator 95
scandens 17
scapha 8
Scapteriscus 54
Scaptomyza 54
Scatophaga 66
Schistocerca 32
Schizocerus 56
Schizoneura 12
Sciapteron=Memythrus 21
Scolytus 13, 19, 20, 76, 82, 101

Page.

scripta 90
scrophulariæ 65
scrutator 42
Scutellaris 21
scutellatus 76, 92
Scutigera 64
Scymnus 12
Semasia 50
senatoria 85
septendecim 13, 19, 91
sequoiæ 74
Sericaria=Bombyx 103
sericeum 98
sericeus (Hylesinus) 75
sericeus (Tremex) 99
serrata 69
serraticeps (Pulex)=Ctenocephalus canis .. 67, 69
servicorne=Lasioderma testaceum 63
Serropalpus 83
servus 9
Sesia (*see* Ægeria) 25, 28
sexta 57
Sibine 8, 89
sibiricus 79
Sigalphus 21
signatus 26
signifera 56
Silvanus 61
similalis 34, 44, 51
similis (Chilocorus) 12, 105
similis (Dendroctonus)=n. sp 74
simplex =(Agromyza) 57
simplex (Bracon) 82
Simulium 66, 68
Sinoxylon 22, 98
sinuata 53
sinuatus 21
Siphocoryne 40
Sitodrepa 62
Sitones 33
Sitotroga 61
Smilia=Pentilia 12
solanella (*Lita, Gelechia*)=Phthorimæa operculella 54
sollicitans 103
somniaria 88
soror 41
sparsus (*Pityophthorus*) (*see* Pityogenes n. sp.) 80
speciosus (Plagionotus) 93
speciosus (Sphecius) 19
Spermophagus 50
sphærocephalus 69
Sphærophoria 40
Sphecius 19
Sphecodina 23
sphegeus 101
Sphenophorus 30, 39
Sphinx 84
Sphragisticus 45
spiculatus 77, 92
Spilosoma=Diacrisia 49
spinosus 55, 58
splendoriferella 15
spretus 32, 38, 39, 43
Stegomyia 65, 103
Stephanoderes 13
sticticalis 44
stigma 85
stimulea 8, 89
Stiretrus 58
Stizus=Sphecius 19
Stomoxys 66, 68
strobi 91
subangulata 21
subcostulatus 74
subdepressus 63
subgothica 49, 57
subjuncta 51
subscaber 76
subsignarius 16
sulcatus 70
sulfureana 34, 59
supernotatus 28
surinamensis 61
suturellus 9
Symmerista 87
Synchlora 27

	Page
Syneta	17
Syrphus	40
Systena	46, 48
tabanivorus	68
Tabanus	68
Tachina	39
tæniata	48
tapetzella	65
tarsale	62
Telea	84
Telephorus	18, 32
tenebricosus	91
Tenebrio	62
Tenebroides	62
Tenuipalpus	9
Teras=Acleris	15
Terias=Eurema	37
Termes=Leucotermes	64
tessellaris	85
testaceipes	40
testaceum	63
Tetracha	55
Tetranychoides	9
Tetranychus	8
Tetropium	83, 96
texana=Cassida pallidula	54
textor	86
Thalessa	100
Thanasimus	82, 101
Thecla=Uranotes	50
Therina	88
thoas	8
Thorybes	36
Thrips	32
Thyreus=Sphecodina	23
Thyridopteryx	8, 16
tibiator (Calyptus)	26
tibiator (Limneria)	45
Tibicen	13, 19, 91
tigrina	94
tiliaria	16
Tinea	60, 64
Tinea=Trichophaga, Tineola	65
Tineola	65
Tipula	31
tipuliformis	28
Tischeria	16
tityrus	84
tityus	89
Tmetocera	15
tomentosus (Epitragus)	7
tomentosus (Podabrus)	40
Tomicus	72, 73, 81, 100
Tortricid	79
Tortricid, undet., under apple skin	18
Tortrix=Epagoge	34
transversata	88
tredecimpunctata	17
Tremex	99
triangularis	47
Tribolium	63
Trichobaris	54
Trichodectes	69
Trichophaga	65
tridentata	93
triferana	34, 59
trifolii (Dasyneura)	33
trifolii (Hylastinus)	32
trifolii (Macrosiphum)	37
trifolii (Mamestra)	35, 44
trifurcata	48
trilineata	55
trinotata	54
Trioxys=Lysiphlebus	40
tristis	60
tritici (Isosoma)	41
tritici (Thrips)	32
Troctes	64
Trogoderma	62
Trogosita	102
Trogosita=Tenebroides	62
truncatus	63
Typeta=Rhagoletis	18
Trypodendron	71
tuberculatum	102
turgidus	26
Tyloderma	24
Typhlocyba	24
Typhœa	61
Typophorus	25
uhleri	45, 49
ulmi	14
undalis	54
undata	24
undulata	88
undulatus	96
undulosa	84
unicolor	33, 47, 48, 55
unijuga	86
unio	23
unipuncta	29, 35, 39, 43
unipunctata	57
unispinosus	76
Uranotes	50
Urocerus	99
Urographis	96
uvæ	22
vadosus	33
valens	74
Vanessa=Euvanessa	83
variabilis	95
varians	24
varius=Anthrenus verbasci	62
vastatrix	22
Vedalia=Novius	106
ventricosus (*Nematus*)=Pteronus ribesii	29
verbasci	62
vernata	16, 88
vespertinus	46
vestimenti	67
vestita	93
vetusta	87
vicina	43
vidua	86
villosum	13, 91
virescens	102
virginica (Diacrisia)	49
virginica (Tetracha)	55
virginiensis	98
viticida	22
vitifex=Typhlocyba comes	24
vitis	24
vittata (Diabrotica)	59
vittata (Epicauta)	47, 55
vittata (Phyllotreta)	53
vittatus	68
vituli	69
vitusta	87
volvatus	82
vulgivagellus	30
xanthomelæna	46
Xanthonia	18
Xanthotype	29
Xyleborus	7, 13, 20, 71, 98
Xylina	18
Xylochinus	81
Xylocrius	28
xylographus=Xyleborus saxeseni	13
Xylotrechus	96
ypsilon	51
Zerene	36
Zeuzera	98
zimmermani=Phyllotreta sinuata	53
Zophodia	29

INDEX TO COMMON NAMES.

Page.

Abbot's sphinx. (*See* Sphinx.)
white pine sawfly. (*See* Sawfly.)
Achemon sphinx. (*See* Sphinx.)
Alder, white, bark-beetle 75
Aleyrodes. (*See* White-fly.)
clover. (*See* Clover.)
Alfalfa webworm. (*See* Webworm.)
Ambrosia-beetle, cosmopolitan 13
oak 7
Ambrosia-beetles 70
American cockroach. (*See* Cockroach.)
copper. (*See* Butterfly.)
dagger-moth. (*See* Moth.)
frit-fly. (*See* Frit-fly.)
gad-fly. (*See* Gad-fly.)
locust. (*See* Locust.)
sawfly, large. (See Sawfly.)
spruce bark-beetle 81
tent-caterpillar. (*See* Caterpillar.)
Angoumois grain-moth. (*See* Grain.)
Angular-winged katydid. (*See* Katydid.)
Anomala, varied 24
Ant, little red 65
white 64
Aphis, apple 17
cabbage 53
clover 37
cotton 10
grain, English 40
European 40
German 39
hop 21, 41, 104
orange 10
woolly apple 12
Apple, aphis 17
curculio 18
fruit maggot 18
leaf flea-weevil 17
leaf-folder, lesser 15
miner 16
sewer, Chapin's 15
skeletonizer 15
tree borer, flat-headed 12, 97
round-headed 12
Bucculatrix 15
caterpillar, yellow-necked 86
pruner 13
shot-borer 13, 20
shot-hole borer 13
tent-caterpillar 15
twig-beetle 7, 13
borer 13, 22
wood-stainer 12
woolly aphis 12
worm (codling moth) 18
Arborvitæ, giant, Dryophilus 78
ptinid 78
Argus tortoise-beetle. (*See* Tortoise-beetle.)
Arizona Dendroctonus 101
Army worm 29, 35, 39, 43
beet 44
fall 30, 31, 34, 39, 44, 52
wheat-head 39
Ash borer, banded 95
four-marked 96
Ash-gray blister-beetle. (*See* Blister-beetle.)
Sphinx 84
wavy 84
tree bark-beetle 75
Asiatic ladybird. (*See* Ladybird.)
Asparagus beetle, common 58
twelve-spotted 58
miner 57
Australian ladybird. *See* (Ladybird.)

Page.

Bagworm, the common 8, 16
Banded flea-beetle. (*See* Flea-beetle.)
horntail 99
Urographis 96
Bark-beetle, American spruce 81
ash-tree 75
bald cypress 101
balsam-fir 81
birch 81
cedar 81
companion 100
densely-punctured 71
destroyer, cloudy 82
European 101
destroyers. (*See* Clerids.)
destructive pine 100
fruit-tree (shot-hole borer) 13, 19, 20
grand fir 75
hickory 101
knobcone pine 71
larger fir-tree 75
Lawson cypress 100
lodgepole pine 71
minute birch 80
oak 80
spruce 82
native peach 19
Parmacheene 81
redwood 74
smaller fir 72
small red spruce 80
spruce 81
western cedar 73
fir 72
hemlock 75
oak 71
white alder 75
spruce 81
Bark-borer, Douglas spruce 76
eastern hemlock 97
flat-headed pine 97
small pine 93
western cedar 77
hemlock 77, 97
Bark-louse. (*See* Scale.)
weevil, sugar pine 78
Barley-straw worm 41
Barnacle scale. (*See* Scale.)
Bean cutworm 49
ladybird 48
leaf-beetle 48
stem-borer, Lima 47
weevil, common 49
European 50
four-spotted 50
Mexican 50
Beautiful wood nymphs. (Large and small.)
(*See* Wood nymphs.)
hickory borer 94
Bedbug 67
Bee, honey 105
Beet army worm 44
Chlorops 43
leaf-miner 43
Beetle. (*See under* Ambrosia, Asparagus, Bark, Blister, Cucumber, Flea, Flour, Flower, Grain, Leaf, Pine, Potato, Spider, Timber, and Tortoise beetles.)
black 64, 67
cabinet 62
carpet 65
black 61
cigarette 63
drug store 62
gibbous June 33, 46

Page.

Beetle, goldsmith 89
June (white grub) 25, 30
larder 65
lichen-like 94
May 30, 46, 49
pear-blight 13, 20
red turnip 53
rhinocerus 89
sap, corn and meal 62
snout, imbricated 17, 33, 45, 48
thunderbolt 95
Belted chion 94
Bill-bug, blue-grass 30
clay-colored 39
Birch bark-beetle 81
minute 80
borer, bronze 77, 97
timber beetle 71
Birdseye pine 77
Black "beetle." (*See* Beetle.)
blister beetle. (*See* Blister beetle.)
bordered yellow. (*See* Butterfly.)
carpet beetle. (*See* Carpet-beetle.)
cutworm. (*See* Cutworm.)
gadfly. (*See* Gadfly.)
gooseberry borer. (*See* Gooseberry.)
legged tortoise-beetle. (*See* Tortoise beetle.)
scale. (*See* Scale.)
striped, ear-fly. (*See* Ear-fly.)
gad-fly. (*See* Gad-fly.)
Blackberry gall-maker 26
Blazed tree-borer 83
Blister-beetle, ash-gray 33, 47, 48, 55
black 47, 55
crow 55
gray 47, 55
Nuttall's 33, 47, 48
spotted 47, 56
striped 47, 55
white 55
mite, pear 20
Blood-red ladybird. (*See* Ladybird.)
sucking cone-nose 67
Blue-grass bill-bug. (*See* Bill-bug.)
horntail 99
spangled peach-moth 19
Body louse. (*See* Louse.)
Bogus potato beetle 55
Boll, cotton, weevil. (*See* Cotton.)
worm. (*See* Cotton.)
Book louse 64
Borer, ash-colored mulberry 94
banded ash 95
beautiful hickory 94
black-horned pine 96
blazed-tree 83
blue-winged walnut 94
bronze birch 77, 97
cedar 96
cedar-tree 83
common elm-tree 93
common hickory 94
curious cypress 95
destructive spruce wood 83, 96
dusty oak 94
flat-headed apple tree 12
hickory 97
pine 97
four-marked ash 96
heartwood pine 98
knob-horned pine 93
linden 93
locust 93
mountain ash 83
obsolete pine 93
painted hickory 94
pine, lesser 93
heartwood 98
poplar 93
red-shouldered ptinid 98
ribbed pine 96
rigid cypress 95
round-headed apple tree 12
rustic 96
shot 13, 20
shot-hole 13
southern oak 95

Page.

Borer, sugar maple 93
tiger hickory 94
turpentine 97
two-lined chestnut 97
variable oak 95
wavy spruce 96
white-lined cypress 94
(*See also under* Apple tree, Bark-borer, Cane, Clover, Corn, Currant, Gooseberry, Grain, Grape, Peach, Raspberry, Root, Squash-vine, Stalk, Stem, Strawberry, Sweet potato.)
Borers, flat-headed 97
round-headed 83, 91, 92
Bot, ox 69
Bot-fly, horse 69
sheep 69
Brenthis, northern 98
Broad-horned flour-beetle. (*See* Flour-beetle.)
nosed grain-weevil. (*See* Grain.)
Bronze birch borer 77, 97
Bronzed cutworm. (*See* Cutworm.)
Brown dung fly. (See Fly.)
leaf-hopper. (See Leaf.)
spider-beetle. (*See* Spider-beetle.)
tail moth 17, 87
(*See also* Moth.)
Bucculatrix. (*See* Apple tree.)
Buck moth 85
Bud moth, eye-spotted 15
worm, false 58
Buffalo. (*See* Gnat, Tree hopper.)
"Buffalo-moth." (*See* Carpet-beetle.)
Buff-tipped butterfly 84
Bug. (*See* Bedbug, Bill-bug, Plant-bug, Squash bug.)
chinch 40, 45, 104
clouded pigweed 45
croton 64
false chinch 45
harlequin cabbage 52
kissing 106
mealy 10
military 45
negro, little 27
purslane 45
red (*Dysdercus*) 9
red (*Leptus*) 67
sandy ground 45
Buprestis, golden 98
Butterfly, American copper 36
black-bordered yellow 37
buff-tipped 84
cabbage, large 51
cloudless sulphur 37
comma 42
comyntas 36
gray hair-streak 50
hackberry, common 84
little sulphur 37
mourning-cloak 83
northern cloudy wing 36
orange sulphur 36
pine 84
pot herb 51
semicolon 42
southern dog-face 36
viceroy 83
violet-tip 83
yellow 37

Cabbage, aphis 53
bug, harlequin 52
butterfly, large 51
curculio 54
flea-beetle, western 53
leaf-miner, imported 54
looper 36, 45, 52
maggot 53
web-worm, imported 54
worm, cross-striped 52
imported 50
southern 51
Cabinet beetle. (*See* Beetle.)
Cadelle 62
California red scale 11

Page.

California tussock moth 87
Phryganidia 86
Californian tent-caterpillar 88
Callidium, chestnut 94
Canadian Leptura 96
Cane-borer, raspberry 26
red-necked 26
Canker-worm, fall 16
spring 16, 88
Carolina. (*See* Locust.)
Carpenter worm, oak 99
poplar 99
Carpet beetle 65
black 61
moth 65
Case-bearer, orange. (*See* Orange.)
pistol 15
making clothes moth. (*See* Clothes moth.)
Cat and dog flea. (*See* Flea.)
Catalpa Sphinx 84
Caterpillar, American tent 88
apple-tree tent 15
black hickory 86
Californian tent 88
forest tent 87
grapevine hog 23
green oak 87
melon 59
northwestern tent 88
orange dog 8
purslane 44
red-humped oak 87
Rocky Mountain tent 88
saddle-back 8
salt marsh 30, 49, 52
skiff 8
social grape 23
stinging 8
striped hickory 86
tufted tent 88
white-marked tussock 16, 87
yellow bear 49
necked apple-tree 86
zebra 36, 44, 53, 58
(*See also* Tussock caterpillar.)
Cattle louse 69
tick 66
Cauliflower pyralid 53
Cecropia moth. (*See* Moth.)
Cedar bark-beetle 81
western 73
borer, western 77
borer 96
tree borer 83
Centipede, house 64
Chaff scale. (*See* Scale.)
Chalcis-fly, cloverseed. (*See* Clover.)
Chapin's apple-leaf sewer. (*See* Apple.)
Cherry-fruit maggot 20
leaf-beetle 20
webworm 88
scale 14, 21
Cheese skipper. (*See* Skipper.)
Chestnut-borer, two-lined 97
callidium 94
timber-worm 98
Chickweed geometer. (*See* Geometer.)
Chinch bug 40, 45, 104
false 45
"Chin" fly. (*See* Fly.)
Chion, belted 94
Chionaspis, orange. (*See* Scale, scurfy.)
Chlorops, beet. (*See* Beet.)
Chrysobothris, orange. (*See* Orange.)
Cicada, periodical (17-year) 13, 19, 91
small western 79
Cigarette beetle. (*See* Beetle.)
Circular scale. (*See* Scale.)
Clay-colored bill-bug. (*See* Bill-bug.)
Clear-winged locust. (*See* Locust.)
moth. (*See* Currant.)
Clerid, clouded 82
dubius 101
hairy 102
orange banded 101
spider-like 101
Clerids 101

Page.

Climbing cutworm. (*See* Cutworm.)
Clothes moth, case-making 64
webbing 65
Clouded pigweed bug. (*See* Pigweed.)
Cloudless sulphur. (*See* Butterfly).
Cloudy-wing, northern 36
Clover, Aleyrodes 32
aphis 37
cutworm 35, 44
flavescent, weevil 33
flower midge 38
hay worm 37
leaf midge 33
leaf weevil 32
mite 32
root-borer 32
seed chalcis-fly 32, 38
worm 38
stem-borer 32
worm, green 35
Clytus, red-headed 96
Cockroach, American 64
Codling moth (apple worm) 18, 105
Coffee-bean weevil 7
Colaspis, grapevine. (*See* Grapevine.)
Colorado potato-beetle. (*See* Potato.)
Colydiids 102
Comma butterfly. (*See* Butterfly.)
Commelina owlet-moth. (*See* Owlet-moth.)
Companion bark-beetle 100
Comyntas butterfly. (*See* Butterfly.)
Cone nose, blood-sucking 67
worm, spruce 90
southern pine 90
Confused, flour-beetle. (*See* Flour-beetle.)
Convex flea-beetle. (*See* Flea-beetle.)
Copper, American 36
Corn-ear worm 42, 50, 57, 58
root-worm, western 33
sap-beetle 62
Cosmopolitan ambrosia beetle 13
timber-beetle 71
Cotton aphis 10
boll weevil, Mexican 42, 105
worm 42, 50, 57, 58
stainer 9
Cottonwood root-borer 95
Sphinx, western 84
Cottony cushion scale. (*See* Scale.)
maple scale. (*See* Scale.)
Cowpea weevil 50
Crab louse. (*See* Louse.)
Crambus, vagabond 30
Cranberry looper 29
scale 14, 19, 28
spanworm 59
Cricket, house 64
mole, northern 9
short-winged 54
snowy tree 22, 26
western 39
Crinkly flannel moth 88
Cross-striped cabbage-worm. (*See* Cabbage.)
Croton bug. (*See* Bug.)
Crow blister-beetle. (*See* Blister beetle.)
Crown-borer. (*See* Strawberry.)
girdler. (*See* Strawberry.)
moth. (*See* Strawberry.)
Crumpler, leaf 15
Cryphalus, balsam fir 79
hairy 71
spruce 79
Cucumber beetle, striped 59
twelve-spotted .. 33, 46, 48, 58, 60
flea-beetle 47, 56, 60
Curculio, apple 18
cabbage 54
plum 18, 21
Currant borer, imported 28
clear-wing moth 28
moth, dried 60
stem-borer, native 28
worm, imported 29
native 29
Cutworm, bean 49
black 51
bronzed 36
climbing 17

Page.

Cutworm, clover 35, 44
dark-sided 35
dingy 49
glassy 52
granulated 29, 51
pretty 59
shagreened 51
small white bristly 35
speckled 51
spotted 30
striped 51
variegated 31, 35, 42, 44, 51
w-marked 52
Cypress, bald, bark-beetle 101
borer, curious 95
rigid 95
white-lined 94
Lawson, bark-beetle 100
weevil 92

Dagger-moth, American 86
smeared 26, 27, 35, 86
Dark meal-worm. (*See* Meal-worm.)
red turpentine beetle 74
sided cutworm. (*See* Cutworm.)
tussock-moth 87
Dendroctonus, Arizona 101
Douglas spruce 74
mountain pine 74, 101
Densely punctured bark-beetle 71
Depressed flour-beetle. (*See* Flour-beetle.)
Destroyer, fir-tree 76
western pine 74
Destroyers, bark-beetle 82, 101
Destroying beetle of the Black Hills, pine 100
spruce 82
Destructive leaf-hopper. (*See* Leaf-hopper.)
mealy-bug. (*See* Mealy-bug.)
pine bark-beetle 100
spruce wood-borer 96
Diamond-back moth. (*See* Moth.)
Differential locust. (*See* Locust.)
Dingy cutworm. (*See* Cutworm.)
Distended May-beetle. (*See* May-beetle.)
Dog and cat, flea. (*See* Flea.)
face butterfly, Southern. (*See* Butterfly.)
ange. (*See* Orange.)
Dolurgus, Sitka spruce 73
Dried-currant moth. (*See* Currant.)
Drug-store beetle. (*See* Beetle.)
Dryophilus, giant arborvitæ 78
Dubius clerid 101
Dung fly, brown 66
Dusky plant-bug. (*See* Plant-bug.)

Ear fly, black-striped 68
worm. (*See* Corn.)
Egg-plant flea-beetle. (*See* Flea-beetle.)
Eight-spotted forester. (*See* Forester.)
Elater, eyed 102
small-eyed 102
Elm leaf-beetle, imported 90
larger 90
tree borer 93
spanworm 16
English grain-aphis. (*See* Grain.)
Euphoria 18
European bean-weevil. (*See* Bean.)
fruit-scale. (*See* Scale.)
grain-aphis. (*See* Grain.)
Eyed elater 102
ladybird. (*See* Ladybird.)
Eye-spotted budmoth. (*See* Budmoth.)
Excrement fly, shining. (*See* Fly.)

Fall army worm. (*See* Army worm.)
cankerworm. (*See* Cankerworm.)
webworm. (*See* Webworm.)
False chinch-bug. (*See* Bug.)
worm. (*See* Strawberry.)
Fidia, grapevine. (*See* Grapevine.)
Fig-eater 18
Fir, balsam, bark-beetle 81
Cryphalus 79
bark-beetle, smaller 72
western 72
branch Scolytus 76

Page.

Fir, California white, Scolytus 76
grand, bark-beetle 75
larger, bark-beetle 75
tree destroyer 76
Scolytus, smaller 76
weevil 92
wood-engraver 75
Five-spined Tomicus, western 73
Flannel moth, crinkly 88
Flat-headed apple-tree borer. (*See* Apple.)
borers 97
hickory-tree borer. (*See* Hickory.)
Flavescent weevil, clover 33
Flea, cat and dog 67, 69
Flea-beetle, banded 48
convex 46
cucumber 47, 56, 60
egg-plant 52, 56
grapevine 23
horse-radish 53
pale-striped 46, 48
punctured 60
red-legged 17
spinach 46
strawberry 25
striped 53
sweet-potato 56
toothed 47
triangular 47
wavy-necked 46
striped 53
western 53
cabbage 53
hopper, garden 45, 49
weevil, apple-leaf. (*See* Apple.)
Florida wax scale. (*See* Scale.)
Flour-beetle, broad-horned 63
confused 63
depressed 63
rust-red 63
slender-horned 63
small-eyed 63
Flour-moth, Mediterranean 60
Flower-midge, clover 38
Fluted scale. (*See* Scale.)
Fly. (*See under* Bot, Chalcis, Ear, Frit, Fruit, Gad, Saw, and Syrphus.)
Fly, chin 69
dung 66
excrement, shining 66
green bottle 66
heel (*see* Ox-bot) 69
Hessian 41, 103
Hippelates 66
horn 69
house 66, 103
little 66
screw-worm 66, 69
stable 66, 68
vinegar or fruit 65, 66
warble 69
white 9
Folder, lesser apple leaf 15
grape leaf 23
Forbes scale (cherry scale) 14, 21
Foreign grain-beetle. (*See* Grain beetle.)
Forest span-worm, large 88
tent caterpillar 87
Forester, eight-spotted 23
Four-horned Sphinx 84
lined plant bug. (*See* Leaf bug.)
marked plant leaf-beetle. (*See* Leaf-beetle.)
ash borer. (*See* Ash borer.)
spined Tomicus 73
spotted bean-weevil. (*See* Bean.)
Frit fly, American 41
Fruit fly, Indian 19
maggot, apple 18
cherry 20
mite, orange 9
moth, grape 24
tree bark beetle 13, 19, 20
worm, green 18
gooseberry 29
Fuller's rose-beetle. (*See* Rose.)

Page.

Gadfly, American 68
black 68
black-striped 68
Mexican 68
Gall aphis, Engelmann spruce 79
Sitka spruce 79
maker, blackberry 26
Garden flea-hopper. (*See* Flea-hopper.)
webworm. (*See* Webworm.)
Geometer, chickweed 35
German grain-aphis. (*See* Grain.)
Gibbous June-beetle. (*See* June-beetle.)
Girdler, crown. (*See* Strawberry.)
hickory twig 92
poplar 93
Glassy cutworm. (*See* Cutworm.)
Glover's scale. (*See* Scale.)
Gnat, southern buffalo 66, 68
turkey 68
Golden Buprestis 98
tortoise-beetle. (*See* Tortoise beetle.)
Goldsmith beetle 89
Gooseberry-borer, black 28
fruit worm 29
spanworm 28
Grain-aphis, English 40
European 40
German 39
beetle, flat, foreign 61
merchant 61
red or square-necked 61
saw-toothed 61
borer, larger 63
leaf-hopper 40
moth, Angoumois 61
sawfly, western 40
weevil, broad-nosed 63
Granary weevil 63
Granulated cutworm 29, 51
Grape caterpillar, social 23
fruit-moth 24
leaf-folder 23
Phylloxera 22
scale 22
seed weevil 24
worm 24
Grapevine Colaspis 24, 33, 46
Fidia 22
flea-beetle 23
hog-caterpillar 23
leaf-hopper 24
plume-moth 23
root-borer 21
worm 22
sawfly 23
Grasshopper. (*See* Locust.)
lubber 9
Grass sawfly. (*See* Sawfly.)
worm, northern 29
Gray blister beetle. (*See* Blister beetle.)
comma. (*See* Butterfly.)
hair-streak. (*See* Butterfly.)
striped greenhead. (*See* Greenhead.)
Greedy scale. (*See* Scale.)
Green bottle fly. (*See* Fly.)
clover worm. (*See* Clover.)
fruit worms 18
Green tortoise-beetle. (*See* Tortoise beetle.)
trogositid 102
Greenhead, common 68
gray-striped 68
Grub, hop 42
white 25, 30, 46
Gypsy moth 17, 87

Hackberry butterfly, common 84
Hair-streak, gray. (*See* Butterfly.)
Hairy clerid 102
Cryphalus 71
faced joint worm 41
Ham beetle, red-legged 65
skipper 65
Harlequin cabbage bug. (*See* Cabbage.)
Hawk-moth, sweet potato 56
Hay worm, clover 37
Head louse. (*See* Louse.)
maggot. (*See* Sheep.)
Hemispherical scale. (*See* Scale.)

Page.

Hemlock bark-beetle, western 75
bark-borer, eastern 97
western 77, 97
wood-stainer, western 70
Hessian fly. (*See* Fly.)
Hickory bark-beetle 101
borer, beautiful 94
common 94
flat-headed 97
painted 94
tiger 94
caterpillar, black 86
striped 86
horned devil 85
husk-worm 90
soft-scale 91
timber-beetle 98
tussock caterpillar 85
twig-girdler 92
Hippelates fly. (*See* Fly.)
Hog-caterpillar. (*See* Grape.)
Honey bee 105
Hooded plant-bug. (*See* Plant-bug.)
Hop-aphis 21, 41, 104
grub 42
snout-moth 42
Horn-blower. (*See* Tobacco worm.)
fly. (*See* Fly.)
Horned squash-bug. (*See* Squash.)
Horntail, banded 99
black pine 99
blue 99
small pine 99
white horned 99
yellow winged 99
Horntails 99
Horse bot fly. (*See* Bot-fly.)
louse, sucking. (*See* Louse.)
radish flea-beetle. (*See* Flea-beetle.)
House centipede. (*See* Centipede.)
cricket. (*See* Cricket.)
mosquito. (*See* Mosquito.)
fly. (*See* Fly.)
little. (*See* Fly.)
Hudson Bay Tomicus 81
Hylesinus, Douglas spruce 75
shore pine 75
Hylurgops, Sitka spruce 74
western pine 74
Hyparpax, rosy 87

Imbricated snout-beetle. (*See* Snout-beetle.)
Imperial moth 85
Imported cabbage leaf-miner. (*See* Cabbage.)
webworm. (*See* Cabbage.)
worm. (*See* Cabbage.)
currant-borer. (*See* Currant.)
worm. (*See* Currant.)
pea-moth. (*See* Pea.)
Indian Euphoria (brown fruit chafer) 18
fruit-fly. (*See* Fruit-fly.)
meal moth. (*See* Moth.)
Io moth. (*See* Moth.)
Isabella tiger-moth 30, 36, 44

Joint worms 41
hairy-faced 41
wheat 14
June beetle 25, 30
fig-eater 18
gibbous 33, 46

Katydid 89
angular-winged 9
Kissing bug 106

Ladybird, Asiatic 105
Australian 106
bean 48
blood red 17, 40, 55
eyed 17, 41
squash 60
twice-stabbed 55
Larch sawfly 89
Larder beetle. (*See* Beetle.)
Leaf-beetle, bean 48

Page.

Leaf-beetle, cherry 20
four-marked 27
imported elm 90
larger elm 90
rose 25
spotted willow 90
strawberry 25
spotted 25
striped willow 90
sugar-beet, greater 46
lesser 46
chafer, strawberry 25
crumpler 15
folder, apple 15
grape 23
locust 84
hopper, brown 45
destructive 40
grain 40
grapevine 24
midge, clover 33
miner, apple 16
beet 43
imported cabbage 54
mining locust-beetle 48
notcher, orange 8
Pegomya, beet 43
roller, oblique-banded 15, 34
orange 8
raspberry 25, 27
red-banded 34, 59
strawberry 26, 27
sewer, Chapin's apple 15
skeletonizer, apple 15
weevil, clover 32
Leather jacket 31
Lemon silver mite 9
Lentil weevil. (*See* Weevil.)
Leopard moth 98
Leptura, Canadian 96
Lesser locust. (*See* Locust.)
wheat-straw maggot. (*See* Wheat.)
Lichen-like beetle 94
Lima-bean stem-borer. (*See* Bean.)
Lime-tree winter-moth. (*See* Moth.)
Linden borer 93
Line-marked Colydiid 102
Little green tortoise beetle. (*See* Tortoise beetle.)
house fly. (*See* Fly.)
negro-bug. (*See* Negro-bug.)
red ant. (*See* Ant.)
sulphur. (*See* Butterfly.)
Live-oak root-borer 95
Locust. (*See* Cicada, 17-year locust.)
American 32
Carolina 31, 43
clear-winged 39
differential 31, 38, 43
lesser 30, 37, 38, 43, 58
red-legged 38, 43, 58
Rocky Mountain 32, 38, 39, 43
two-striped 31, 37, 43, 58
Locust beetle, leaf-mining 48
borer 93
leaf-folder 84
Long-nosed ox-louse. (*See* Louse.)
scale. (*See* Scale.)
spined mealy-bug. (*See* Mealy-bug.)
Looper. (*See* Cabbage, Cranberry.)
Louse. (*See under* Aphis.)
body 67
book 64
cattle 69
crab 67
head 67
horse, sucking 69
ox, long-nosed 69
short-nosed 69
sheep 69
Lubber grasshopper. (*See* Grasshopper.)
Lunated long-sting 100

Maggot. (*See* Apple, Cabbage, Cherry, Sheep, and Wheat.)
Malaria mosquito. (*See* Mosquito.)
Maple scale, cottony. (*See* Scale.)
gloomy. (*See* Scale.)

Page.

Maple sugar, borer 93
worm, green-striped 85
worm, semi-looping 86
Margined blister-beetle. (*See* Blister-beetle.)
May beetle 30, 46
distended 30, 49
Meadow worm. (*See* Leather-jacket.)
Meal sap-beetle. (*See* Sap-beetle.)
snout-moth. (*See* Snout-moth.)
worm, dark 62
yellow 62
Mealy-bug, destructive 10
long-spined 10
wing (white-fly) 9
Mediterranean flour-moth. (*See* Flour.)
Melon caterpillar. (*See* Caterpillar.)
Merchant grain-beetle. (*See* Grain.)
Mexican bean-weevil. (*See* Bean.)
cotton boll weevil. (*See* Cotton.)
gadfly. (*See* Gadfly.)
Military bug. (*See* Bug.)
Millipede, ringed 54
Miner. (*See* Asparagas and Leaf-miner.)
Midge, clover-flower. (*See* Clover.)
clover-leaf. (*See* Clover.)
Mite. (*See* Clover, Orange, Pear.)
orange fruit 9
pear blister 20
Mole-cricket, northern 9
short-winged 54
Mosquito, house 67
malaria 65, 103
salt-marsh 103
yellow-fever 65, 103
Moth. (*See under* Bud, Flour, Fruit, Hawk, Grain, Owlet, Plume, Snout, Tussock, and Tiger.)
blue-spangled peach 19
brown-tail 17, 87
buck 85
carpet 65
cecropia 17
clothes 64, 65
codling 18, 105
crinkly flannel 88
currant clearwing 28
dagger, American 86
smeared 86
diamond-back 52
dried-currant 60
gypsy 17, 87
imperial 85
imported pea 50
indian-meal 61
io 16, 35
leopard 98
lime-tree winter 16
Mediterranean flour 60
peach-twig 19
polyphemus 84
strawberry crown 25
white-marked tussock 87
wolf 60
Mottled tortoise-beetle. (*See* Tortoise-beetle.)
Mountain ash borer 83
Mourning cloak butterfly 83
Mulberry borer, ash colored 94

Nais tiger-moth. (*See* Tiger-moth.)
Native currant stem-borer. (*See* Currant.)
currant worm. (*See* Currant.)
peach bark-beetle. (*See* Peach.)
Negro-bug, little 27
New York weevil. (*See* Weevil.)
Northern Brenthis 98
cloudy-wing. (*See* Butterfly.)
grass-worm. (*See* Grass-worm.)
leaf-footed plant-bug. (*See* Plant-bug.)
mole-cricket. (*See* Cricket.)
tobacco worm. (*See* Tobacco.)
Northwestern tent-caterpillar 88
Nut weevils 90
Nuttall's blister-beetle. (*See* Blister-beetle.)

Oak ambrosia beetle. (*See* Ambrosia.)
bark-beetle, minute 80

Page.

Oak bark-beetle, western 71
borer, dusty 94
southern 95
variable 95
carpenter worm 99
caterpillar, green 87
red humped 87
live, root-borer 95
pruner 91
span-worm, western 88
timber-worm. (*See* Northern Brenthis.)
tussock caterpillar 85
twig Ormyrus 77
webworm 89
worm, orange-striped 85
worm, spiny 85
Oblique-banded leaf-roller. (*See* Leaf-roller.)
Oleander scale. (*See* Scale.)
Orange aphis 10
banded clerid 101
case-bearer 8
Chionaspis 11
Chrysobothris 7
dog (hog caterpillar) 8
fruit-mite 9
leaf-notcher 8
roller 8
rust-mite 9, 106
sawyer 8
striped oak-worm 85
sulphur 36
white spot 9
Oregon Tomicus 73, 100
Ormyrus, oak twig 77
Owlet-moth, commelina 35, 57
Ox-bot 69
louse, long-nosed 69
short-nosed 69
Oyster shell. (*See* Scale.)

Pale-striped flea-beetle. (*See* Flea-beetle.)
Tremex 99
tussock caterpillar 85
Pales weevil 92
Pan-American Platypus. (*See* Platypus.)
Parmacheene bark-beetle 81
Pea moth, imported 50
weevil 49
Peach bark-beetle, native 19
borer 19
moth, blue-spangled 19
scale 19
twig moth 19
Pear-blight beetle 13, 20
blister-mite 20
borer, sinuate 21
Psylla 20
shot-borer 20
slug 20
Pegomya, beet-leaf 43
Penciled snout-beetle. (*See* Snout-beetle.)
Periodical cicada. (*See* Cicada.)
Phryganidia, California 86
Phylloxera. (*See* Grape.)
Pickle worm 59
Pigeon Tremex 99
Pigweed bug, clouded 45
Pin borer (apple-wood stainer) 12
Pine bark-beetle, destructive 100
bark-borer, flat-headed 97
small 93
birdseye 77
borer, black-horned 96
knob-horned 93
heartwood 98
lesser 93
obsolete 93
ponderous 92
ribbed 96
butterfly 84
cone-worm, southern 90
destroyer, western 74
destroying beetle of the Black Hills 100
fungus-gall weevil 78
horntail, black 99
small 99
heartwood borer 98

Page

Pine Hylurgops, western 74
Jeffrey, twig beetle 72
Knobcone, bark-beetle 71
lodgepole, bark-beetle 71
Monterey, twig-beetle 72
mountain, Dendroctonus 74, 101
wood-engraver 72
sawyer, common 92
shore, Hylesinus 75
silver, Tomicus 73
Sphinx 84
sugar, bark-weevil 78
smaller Tomicus 72
wood-engraver 73
tussock caterpillar 85
twig maggot 78
miner 79
white, Abbot's sawfly 89
sawyer 76, 92
twig-beetle 80
weevil 91
wood-engraver 80
wood-perforator 78
stainer, eastern 70
western 70
yellow, wood-engraver 72
Pistol case-bearer. (*See* Case-bearer.)
Pitch-eating weevil 92
Plant-bug, dusky 25
four-lined 33
hooded 9, 27, 45
northern leaf-footed 59
southern leaf-footed 9
tarnished 33, 45, 52
timothy 31
louse. (*See under* Aphis.)
Platypus, Pan-American 7
western 70
Plum curculio 18, 21
gouger 21
Plume-moth, grape-vine 23
sweet potato 56
Polyphemus moth 84
Ponderous sawyer 77, 92
Poplar borer 93
carpenter worm 99
girdler 93
tent-maker 86
Potato beetle, bogus 55
Colorado 55
three-lined 55
stalk-weevil 54
tuber worm 54
Pot-herb butterfly. (*See* Butterfly.)
Powder-post beetles 98
Pretty cutworm. (*See* Cutworm.)
Prionus, broad-necked 95
lesser 95
tile-horned 21
Pruner, apple-tree. (*See* Apple.)
oak 91
Psylla. (*See* Pear.)
Ptinid, borer, red-shouldered 98
giant arborvitæ 78
Punctured flea-beetle. (*See* Flea-beetle.)
Purple scale. (*See* Scale.)
Purslane bug 45
caterpillar 44
Putnam's scale. (*See* Scale.)
Pyralid, cauliflower 53

Rascal leaf crumpler. (*See* Leaf-crumpler.)
Raspberry cane-borer 26
leaf-roller 25, 27
root-borer 26
sawfly 27
spanworm 27
Red-banded leaf-roller. (*See* Leaf-roller.)
Red bug (*Dysdercus*) 9
(*Leptus*) 67
Red grain-beetle. (*See* Grain.)
Red-headed Clytus 96
legged flea-beetle. (*See* Flea-beetle.)
ham-beetle. (*See* Ham.)
locust. (*See* Locust.)
necked cane-borer. (*See* Cane-borer.)
scale 11
shouldered ptinid borer 98

Page.

Red-shouldered twig-borer. (*See* Twig-borer.)
spider, two-spotted 8
turnip beetle. (*See* Turnip.)
Redwood bark-beetle 74
Resplendent shield-bearer. (*See* Shield-bearer.)
Rhinoceros beetle 89
Ringed millipede. (*See* Millipede.)
Rocky Mountain locust. (*See* Locust.)
tent-caterpillar 88
Roller worm. (*See* Worm.)
Root aphis, corn. (*See* Corn.)
-borer, clover. (*See* Clover.)
cottonwood 95
grape-vine. (*See* Grape.)
live oak 95
raspberry. (*See* Raspberry.)
strawberry. (*See* Strawberry.)
sweet potato 56
worm, grape-vine. (*See* Grape.)
Rose beetle, Fuller's 7
leaf-beetle 25
Rosy Hyparpax 87
Round-headed apple-tree borer. (*See* Apple.)
Round-headed borers 83, 91, 92
Rust mite. (*See* Orange.)
red flour-beetle. (*See* Flour-beetle.)
Rustic borer 96
Rusty brown Tortrix. (*See* Tortrix.)
tussock-moth 87

Saddleback. (*See* Caterpillar.)
Salt-marsh caterpillar. (*See* Caterpillar.)
Sandy ground bug. (*See* Bug.)
San Jose scale. (*See* Scale.)
Sap-beetle, corn. (*See* Corn.)
meal 62
Sawfly, grain, western 40
grape-vine 23
grass 40
larch 89
large American 89
larger sweet-potato 56
raspberry 27
wheat 40
white pine, Abbott's 89
Sawtoothed grain-beetle. (*See* Grain-beetle.)
Sawyer, common pine 92
orange. (*See* Orange.)
ponderous 77
white pine 76, 92
Scale, barnacle 10
black 11, 14
California red 11
chaff 12
cherry 14, 21
circular 11
cottony cushion 10
maple 22, 91
cranberry 14, 19, 28
European fruit 14
Florida wax 10
fluted 10, 105
Forbes's 14, 21
gloomy maple 91
Glover's 11
grape 22
greedy 14
hemispherical 10
hickory, soft 91
long 11
oleander 11
oyster-shell 14
peach 19
purple 11
Putnam's 14, 19, 28
San Jose 12, 13, 20, 28, 105
scurfy, apple 14, 21
orange 11
soft 10
terrapin 28
Scolytus, California white fir 76
fir branch 76
red spruce 82
single-spine 76
smaller fir tree 76

Page.

Screw-worm fly 66, 69
Scurfy scale. (*See* Scale.)
Seed, clover, chalcis-fly. (*See* Clover.)
midge. (*See* Clover flower midge.)
worm, clover. (*See* Clover.)
grape. (*See* Grape.)
weevil, grape 24
Semicolon. (*See* Butterfly.)
Seventeen-year Cicada 13, 19, 91
Shagreened cutworm. (*See* Cutworm.)
Sharpshooter, waved 24
Sheep botfly 69
head maggot 69
louse 69
tick 69
Shield-bearer resplendent 15
Shining excrement fly. (*See* Fly.)
Short-nosed ox-louse. (*See* Louse.)
Shot borer. (*See* Borer.)
Shot-hole borer. (*See* Apple.)
Silkworm 103
Silver fish 64
mite. (*See* Lemon.)
Single-spine Scolytus 76
Sinuate pear borer. (*See* Pear.)
Skiff caterpillar. (*See* Caterpillar.)
Skipper, ham or cheese 65
Slender-horned flour-beetle. (*See* Flour-beetle.)
Slug. (*See* Pear.)
Slug caterpillars 89
Small-eyed Elater 102
flour-beetle. (*See* Flour-beetle.)
Small white cutworm. (*See* Cutworm.)
Smeared dagger 26, 27, 35, 86
Snout-beetle, imbricated 17, 33, 45, 48
penciled 46
moth, hop 42
meal 37, 61
Snowy tree-cricket. (*See* Cricket.)
Social grape caterpillar. (*See* Grape.)
Soft scale. (*See* Scale.)
Southern buffalo gnat. (*See* Gnat.)
cabbage-worm. (*See* Cabbage.)
dog face. (*See* Butterfly.)
grass worm. (*See* Worm.)
leaf-footed plant-bug. (*See* Plant-bug.)
tobacco worm. (*See* Tobacco.)
Spanworm, cranberry 59
elm 16
gooseberry 28
large forest 88
raspberry 27
western oak 88
Speckled cutworm. (*See* Cutworm.)
Sphinx, Abbot's 23
achemon 22
ash 84
catalpa 84
four-horned 84
pine 84
walnut 84
wavy ash 84
western cottonwood 84
white-lined 44
Spider-beetle, brown 62
white-marked 62
Spider-like clerid 101
Spinach flea-beetle. (*See* Flea-beetle.)
Spotted blister-beetle. (*See* Blister-beetle.)
cutworm. (*See* Cutworm.)
strawberry leaf-beetle. (*See* Leaf-beetle.)
Spring canker-worm. (See Canker-worm)
Spruce bark-beetle 81
American 81
minute 82
small red 80
white 81
black, wood-engraver 80
borer, wavy 96
cone-worm 90
Cryphalus 79
destroying beetle 82
Douglas, bark-borer 76
Dendroctonus 74

Page.

Spruce, Douglas, Hylesinus 75
twig-weevil 78
Engelmann, gall-aphis 79
red, Scolytus 82
small bark-beetle 80
Sitka, Dolurgus 73
gall-aphis 79
Hylurgops 74
Tomicus 73
twig-beetle 72
timber-beetle 71
twig wood-engraver, minute 80
weevil, western 91
white, bark-beetle 81
wood-borer, destructive 83, 96
wood-engraver 80
Square-necked grain-beetle. (*See* Grain.)
Squash-bug, common 60
horned 60
ladybird 60
vine borer 59
Stable fly. (*See* Fly.)
Stainer, cotton. (*See* Cotton.)
Stalk-borer 39, 54, 57
corn, smaller 48
Stalk-weevil, potato 54
Stem-borer, clover 32
lima bean 47
native currant 28
Stinging caterpillar. (*See* Caterpillar.)
Strawberry crown-borer 24
girdler 24
moth 25
false worm 25
flea-beetle 25
leaf-beetle 25
spotted 25
chafer 25
roller 26, 27
root-borer 25
weevil 26
Straw-worn, barley 41
greater wheat 41
Striped blister-beetle. (*See* Blister-beetle.)
cucumber-beetle. (*See* Cucumber.)
cut-worm. (*See* Cut-worm.)
flea-beetle. (*See* Flea-beetle.)
Sucking horse louse. (*See* Louse.)
Sugar-beet. (*See* Leaf-beetle and Webworm.)
maple borer 93
Sulphur, cloudless. (*See* Butterfly.)
colored Tortrix 34, 59
little. (*See* Butterfly.)
orange. (*See* Butterfly.)
Sweet-potato flea-beetle 56
hawk-moth 56
plume-moth 56
root-borer 56
sawfly, larger 56
Swollen May-beetle. (*See* May beetle.)

Tapestry moth. (*See* Carpet moth.)
Tarnished plant bug. (*See* Plant bug.)
Ten-spotted Xanthonia. (*See* Xanthonia.)
Tent-caterpillar. (*See* Apple.)
American 88
Californian 88
forest 87
northwestern 88
Rocky Mountain 88
tufted 88
maker, poplar 86
Terrapin scale. (*See* Scale.)
Thick-thighed walking stick. (*See* Walking stick.)
Three-lined potato beetle. (*See* Potato beetle.)
Thrips, wheat 32
Thunderbolt beetle 95
Tick, cattle 66
sheep 69
Tiger-moth, isabella 30, 36, 44
nais 36
Tile-horned Prionus. (*See* Prionus.)
Timber-beetle, birch 71
cosmopolitan 71
hickory 98
spruce 71

Page.

Timber worm, chestnut 98
oak. (*See* Northern Brentbis.)
Timothy plant bug. (*See* Plant bug.)
Tobacco split-worm 54
worm, Northern 57
Southern 57
Tomato worm 57
Tomicus, four-spined 73
Hudson Bay 81
Oregon 73, 100
silver pine 73
Sitka spruce 73
smaller sugar pine 72
western five-spined 73
Toothed flea-beetle. (*See* Flea-beetle.)
Tortoise-beetle, argus 57
black-legged 56
golden 55
green 57
little green 54
mottled 56
two-striped 56
Tortricid in apple fruit. (*See* Apple.)
Tortrix, rusty brown 34
sulphur-colored 34, 59
Tree borer, flat-headed. (*See* Apple, Orange.)
peach. (*See* Peach.)
cricket, snowy. (*See* Cricket.)
hopper, buffalo 13
Tremex, pale 99
pigeon 99
Triangular flea-beetle. (*See* Flea-beetle.)
Trogositid, green 102
Tuber worm. (*See* Potato.)
Tuberculate colydiid 102
Tufted tent-caterpillar 88
Turkey gnat. (*See* Gnat.)
Turnip-beetle, red 53
Turpentine-beetle, dark red 74
borer 97
Tussock-caterpillar, hickory 85
oak 85
pale 85
pine 85
white-marked 16
moth, California 87
dark 87
rusty 87
white-marked 87
Twelve-spotted asparagus beetle. (*See* Asparagus.)
cucumber beetle. (*See* Cucumber.)
Twice-stabbed ladybird. (*See* Ladybird.)
Twig-beetle. (*See* Apple.)
Jeffrey pine 72
Monterey pine 72
Sitka spruce 72
white pine 80
borer. (*See* Apple.)
red-shouldered 22
girdler, hickory 92
maggot, pine 78
miner, pine 79
weevil, Douglas spruce 78
Two-lined chestnut borer 97
spotted red spider. (*See* Red spider.)
striped locust. (*See* Locust.)
tortoise-beetle. (*See* Tortoise-beetle.)
walking-stick. (*See* Walking-stick.)
Tyer, greenhouse leaf. (*See* Leaf-tyer.)

Urographis, banded 96

Vagabond Crambus. (*See* Crambus.)
Varied Anomala. (*See* Anomala.)
Variegated cutworm. (*See* Cutworm.)
Viceroy butterfly 83
Vinegar fly 65, 66
Violet-tip butterfly 83

Walking-stick, common 89
two-striped 9
Walnut borer, blue-winged 94

Page.

Walnut fruit weevil 90
Sphinx 84
weevil 92
Warble fly 69
Waved sharpshooter. (*See* Sharpshooter.)
Wavy-necked flea-beetle. (*See* Flea-beetle.)
striped flea-beetle. (*See* Flea-beetle.)
Webworm, alfalfa 31
cherry-leaf 88
fall 16, 27, 86
garden 34, 44, 51
imported cabbage 54
oak 89
sugar-beet 44
Weevil. (*See under* Apple, Bark-weevil Bean, Cotton, Grain, Rice, and Strawberry.)
clover-leaf 32
coffee bean 7
cowpea 50
cypress 92
fir 92
flavescent clover 33
granary 63
grape-seed 24
lentil 50
New York 13
nut 90
pales 92
pea 49
pine fungus-gall 78
pitch-eating 92
strawberry 26
walnut 92
fruit 90
western spruce 91
white pine 91
Western cabbage flea-beetle. (*See* Flea-beetle, cabbage.)
cicada, small 79
corn-root worm. (*See* Corn.)
cricket. (*See* Cricket.)
flea-beetle. (*See* Flea-beetle.)
West Indian mole-cricket. (*See* Cricket.)
Wheat sawfly 40
head army-worm 39
joint worm 41
stem maggot, greater 31, 41
straw maggot, lesser 41
worm, greater 41
thrips 32
White blister-beetle. (*See* Blister-beetle.)
fly 9

Page.

White grub (June beetle) 25, 30, 46
(May beetle) 30, 46
horned horntail 99
lined Sphinx. (*See* Sphinx.)
marked spider-beetle. (*See* Spider-beetle.)
tussock-caterpillar. (*See* Caterpillar.)
tussock-moth. (*See* Moth.)
spot. (*See* Orange.)
Willow leaf-beetle, spotted 90
striped 90
Winter-moth, lime-tree 16
W-marked cutworm. (*See* Cutworm.)
Wolf-moth. (*See* Moth.)
Wood-engraver, black spruce 80
fir 75
minute spruce twig 80
mountain pine 72
spruce 80
sugar pine 73
white pine 80
yellow pine 72
nymph, beautiful 23
perforator, pine 78
stainer. (*See* Apple.)
eastern pine 70
western hemlock 70
pine 70
Woodpecker work 82
Woolly aphis. (*See* Apple.)
Worm. (*See under* Apple, Armyworm, Bagworm, Bud, Cabbage, Canker, Clover, Corn, Cotton, Currant, Cutworm, Fruit, Joint, Maple, Meal, Oak, Poplar, Root, Spanworm, Straw, Tobacco, Tomato, and Webworm.)
meadow. (*See* Leather-jacket.)
pickle 59
roller 49

Yellow-bear caterpillar. (*See* Caterpillar.)
black-bordered. (*See* Butterfly.)
butterfly. (*See* Butterfly.)
fever mosquito. (*See* Mosquito.)
meal worm. (*See* Meal.)
necked caterpillar 86
winged horntail 99

Xanthonia, ten-spotted 18

Zebra caterpillar. (*See* Caterpillar.)

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